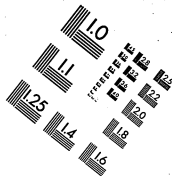
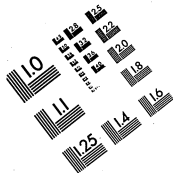




Association for  
Information and Image  
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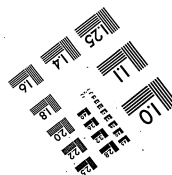
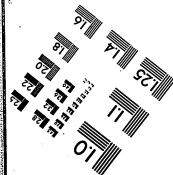
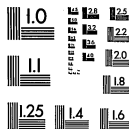
MS303-1980



Centimeter



Inches



# Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION

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(1879-1886)

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**START**

**43**

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THOMAS A. EDISON PAPERS  
A SELECTIVE MICROFILM EDITION  
PART II  
(1879-1886)

REEL 43

NOTEBOOK SERIES (NBK-21)

Fort Myers Notebooks (#4 - #7)

Lamp Factory Notebooks

Pocket Notebooks (Mott Journals)

Fort Myers Notebook, N-86-04-03.3

This notebook covers the period April 1886. The entries are by Edison and Mina Miller Edison. Many of the notes and drawings concern fundamental experiments on magnetic fields and lines of force, including those of the sun, earth, and other planets in the solar system. There is also some material relating to the conversion of heat directly into electricity. Other notes and drawings deal with the coating of carbon filaments, armature design, carbons for arc lights, electric railway motors, telephones, phonographs, quadruplex and phonoplex telegraphs, balloon telegraphs, marine telegraphs, a battery for the grasshopper telegraph, a cotton picker, a larynxial piano, a hearing aid, a device for indicating the depth of steamboats, the testing of metals, the expansion of steam engines, spectroscopy, artificial silk, and the separation of cream. Many of the entries are duplicated in Fort Myers Notebook N-86-04-03.1. The first page contains the notation: "Fort Myers Fla April 3 1886 Ideas T A Edison." The book contains 280 numbered pages.

Blank pages not filmed: 244-245, 248-249.

N-86-04-03

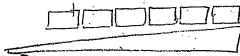
1  
Fort Myers Fla  
April 3 1886

Ideas

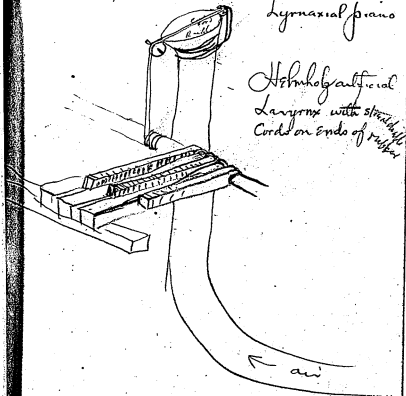
T. A. Edison



April 3 1886 TAE



Laryngeal piano

Helmholz artificial  
Larynx with stretchable  
Cords on ends of rubber

April 3<sup>rd</sup> 1888 TAE

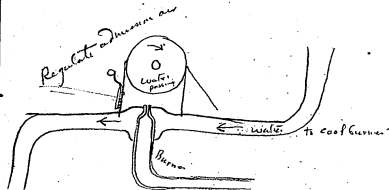
In the gelatinous silica for compound  
Carbons mix minimum quantity Caustic  
Potash to cause it slightly to fuse at  
highest temperatures to hold silica  
together -

---

Lampblack - Drop on hot plate (red hot to  
ignite it) Crude petroleum + revolving  
cylinder -

With Natural gas. Dont use outside  
Oxygen but mix previous to issuance  
from burner with the gas - ascertain  
by experiment smallest quantity  
Oxygen that will take all the  
Hydrogen of the gas & leave no excess

April 3 1886 TAE



or mix air previous with gas -

April 4 1886 TAE -

I propose to rotate the cotton picker spindles by a blast of air acting on a wheel like ~~blower~~ <sup>blower</sup> and blower - The direction being reversible as the spindle goes up or down towards the plant.



Multiple armatures, each armature wound complete in regular way  
 Commutator 1st block to wire to first armature 2nd block to " " 2nd armature  
 + so on

April 4 1886 - TAE

On the filament of carbon coated with silica etc, the thickened ends can be freed from the coating by immersing in an acid - Hydrofluoric, Sulphuric etc but this need not be originally coated if each one done by hand separately.

The increase in the number of candles per horse power with white radiating surface will be greatly increased

Make a  $\frac{1}{10}$  MF Condenser (paraffin) in form cylinder also are exactly same Capacity or near test both outside then enclose one in vacuum - see if vacuum increases Capacity or sharpness -



April 5 1886 TAE

Carbonize less dense material  
such as paper, wood (pine willow<sup>2</sup>)  
Licorice mixed with MgO by auto  
Preliminary to get high resistance  
then if it stands well - Compound  
the surface by MgO -

I think with perfect Carbon the lighter  
material will answer fully as  
well as bamboo & be exceedingly  
high resistance Try parboiled  
paper - White Holly Lampblack  
Licorice + MgO - Lampblack Ta  
+ MgO - Licorice + MgO. punch out  
afroiled sheets of this material  
Municipal 32<sup>s</sup> will answer

April 5 1886 T. A. L.

Mixtures for filaments which are soft can probably be rolled down between tin foil several layers of material & foil one over the other & rolled together thus obtained even.

Several might be stamped out simultaneously bent in loop shape & Carbyd together. The foil melting or could be eat out by acid. Thus making it easier to make fine filaments.

April 5 1886 Tak

With Auto Preliminary Soak  
 Original filaments with Licorice,  
 Prelim + Carbz reg - Then Soak  
 Licorice + prelim + resoak 2 or 3  
 times, then Carbz regular.  
 This has never been fairly tried.

April 6 1886 TAE

Arc Light Carbons - Before baking  
make sheets of pottery mixture  
roll outside covering on Carbon -  
make mixture so as to contract will be  
same as Carbon - put it on very thin  
perhaps 2 or 3 exceedingly thin  $\frac{1}{1000}$   
Coats best - Alumina -  $MgO$   
clays -

Grashopper Battery - Make the size  
of the cells as small as possible so as to  
prevent slow discharge by large surface.  
Indismiss points on vibrator so no fire  
joints to follow up & prevent instantaneous  
discharge

April 6 1886 7a

Lamp -

Make a mouse with like Sir Wm's  
or perhaps that gas lighter which I have  
in Lab run by motor with answer.

Try Counter Static Expts.

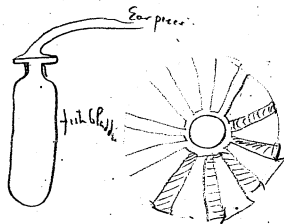
Speaking tube System

Try greatest distance with inch  
gas pipe diaphragm on ends & 35-lbs  
pressure spr inch in tube. - try lead  
pipe  $\frac{1}{4}$  inch dia - also glass tubes  
 $\frac{1}{4}$  dia inside - These will pbbly  
Carry farther on acct smoothness  
but then ends to end & pour sealing wax  
to make joint - Carry pressure high  
as possible in gas or lead pipe Expt

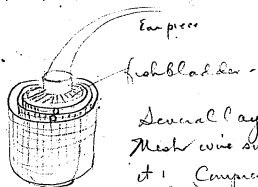
II



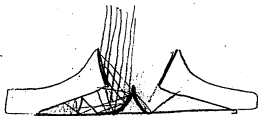
Aprille 1866 TAE  
Draf.



April 6 1886 TAE

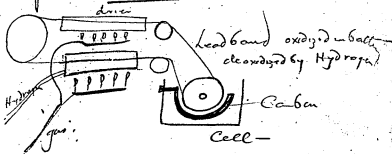


Several layers of 30  
Mesh wire surrounding  
it. Compressed air  
in bladder.



Telephane

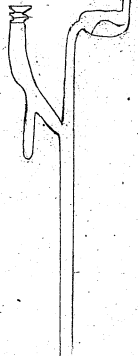
April 1886



Conversion of heat into E by oxidation  
+ reduction of O of lead on continuously  
moving band of lead - passing into liquid  
close to carbon in proper liquid  
Lead is oxidized then a thru drive tube  
thence through Hydrogen reduction  
tube - to battery again & so on  
continuously.



April 7-1886 Mina.  
Tar



Experiments to get a  
porous material whose  
pores will let O through  
and not H.

April 7, 1886 Mina <sup>31</sup> Tat

Use plaster paris -

Cork - Lime - natural -

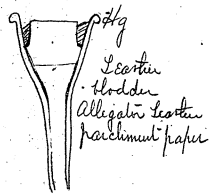
Muscum - pressed

Chalk every degree of pressure.

Cocoanut Charcoal -

Def charcoal -

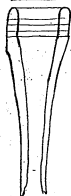
dry clay  
moulded side  
phosphates,  
etc.



Electrify the  
surface of the  
pious material

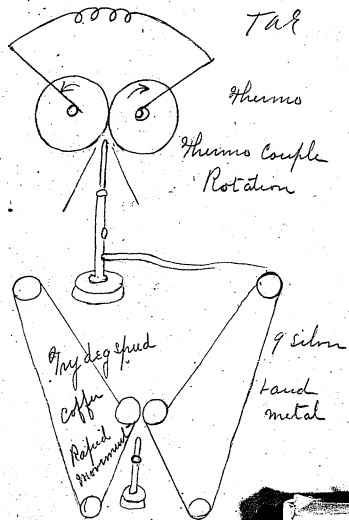
April 7, 1886, Mina

Tar 33



Electrify  
parchment paper  
Learner, etc.

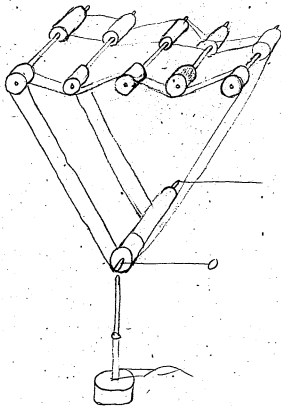
April 8, 1886, Mina.



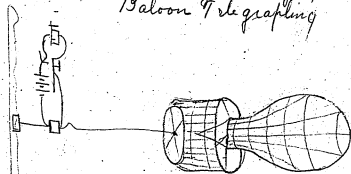
April 7-1886, Minn.

Thermo

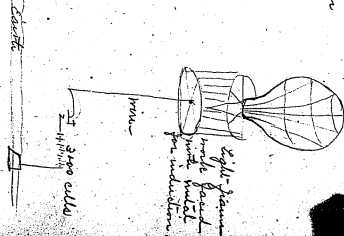
Tae.



April 7 - 1886 Mina TEE 39  
 Air Telegraph  
 Balloon Telegraphing



induction  
 20 miles



light pressure  
 3000 cells

April 8 1886 Tat

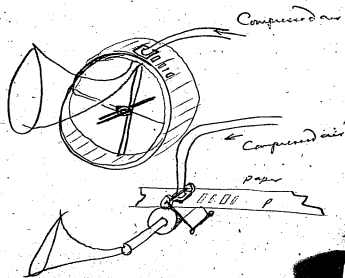
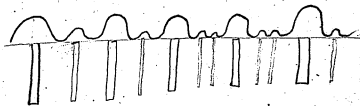
For separating O from air - draw into a vacuum through immense surface of iron or other metal perhaps those metals which have an affinity for O. greatly.

Experiments on loops of all metals in vacuo for Poynt in Silliman's Journal -

Cooling molten metals various kinds in vacuo - also with current (strong) passing through metal while liquid in vacuo - also within powerful magnetic field - ditto with current at various angles

April 8 1886 TAE

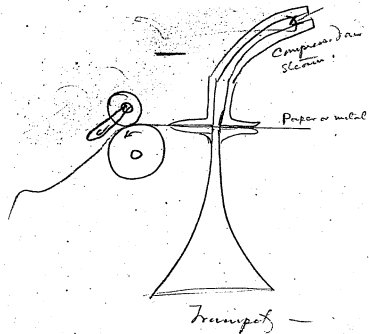
## Siren Photograph

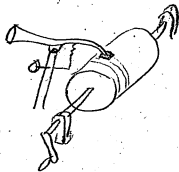




April 8 1886 TAE

Siren Phonograph

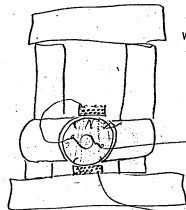


April 8 1886 TAE

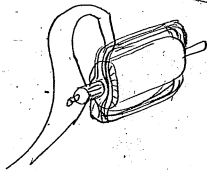
Inducting directly in through  
 by direct impact of the sound  
 wave. I think it will reproduce  
 from same device by expansion  
 of air in turning in neg phase  
 use as Comped



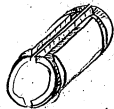
April 11 1886 Taz.



Wind as shown heavy  
wire so ampere spires  
same as on armature  
then put it in main  
Circuit.

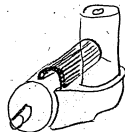
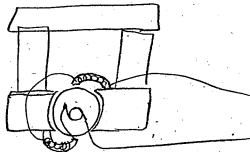


April 11 1886 T.A.S.



Brought to hold  
extra coil.

April 11 1886 Tag



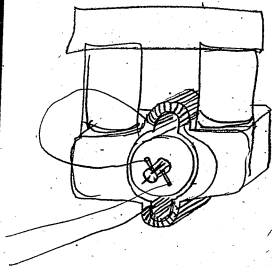
Extra prolongation  
to shift lines force  
to keep neutral  
point constant.

April 11 1886 -

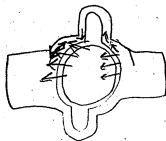
Good

Wind armature thus, one turn around, then before going to Commutator, start end on another turn round but at right angles & after this turn is made go to Commutator & so on winding whole armature in this way,  $\frac{1}{2}$  of the wire is available but the other  $\frac{1}{2}$  prevents the armature itself from sending out lines of force the field is increased & the lines concentrated so we get about same volts as in regular way find more,



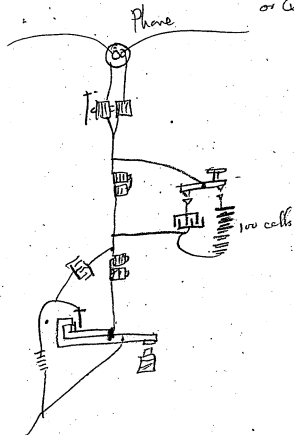
April 11 1886 Faz

good



April 11 1886 Star

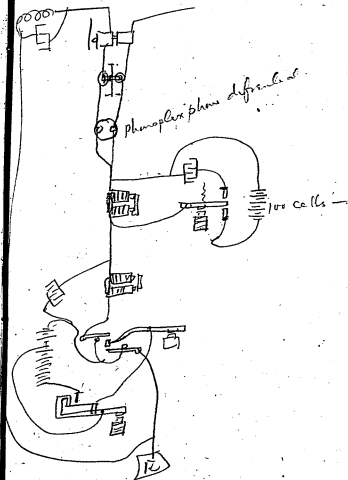
Phonoduplex  
or Quad

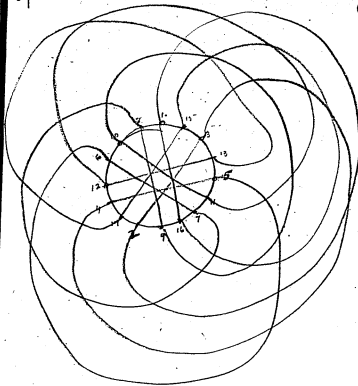




April 11 1886 TAE.

Sextuplex by phonoplex

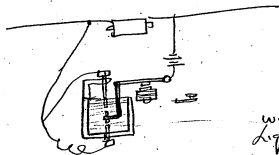




OK

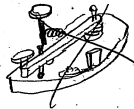
April 11 1886 102

Phonoplex



water & if  
liquids -

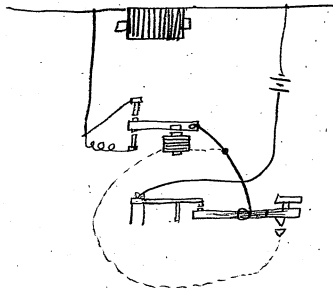
To get rid of the Condenser



April 11 1886

Tae

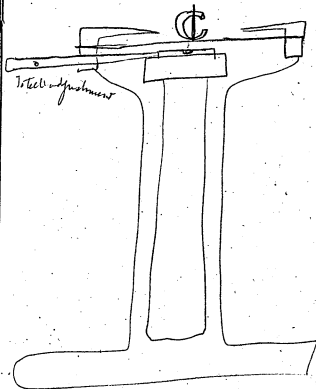
Phonoplex = to prevent battery running  
down



Good

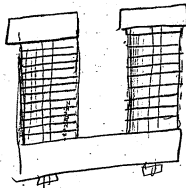
April 11 1886 TAE

Phonoplex

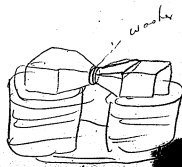


April 11 1886 TAE

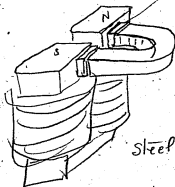
Permanent Magnets



steel washers



April 11 1886 TAE

Perm Magnetssteel plates as  
heads to soft iron  
shoe

steel plates glass hard

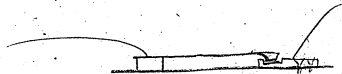
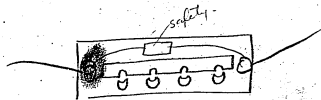
steel wire hardened  
& pulled thro  
twice

April 11 1886

TAE

Condenser Safety Catch

Don't forget about  
making Zinc of  
battery of  
Compressed.  
an amalgam of  
Zinc -



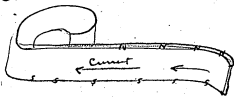
sheet of thinnest paper tissue  
unparaffined. High volts  
will jump + short ckt cond



April 11 1886 TAE

## Telephone Receiver -

a current passing through an  
~~steel~~ wire makes  $\frac{1}{2}$  of one side  
 N other S. same in band



Hardened  
 + magnetized

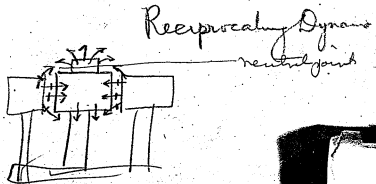
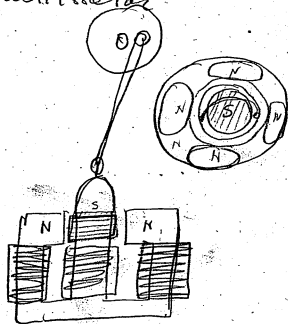
Hence



paper between  
 the coils -



April 11 1886 TAG



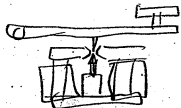
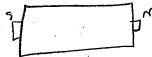
April 11 1886 Quick discharge -

Phenoplex 7 ohm  
overhanging coil -



overhanging coil. see if better

7 ohm Coil with  
steel wire core magnet

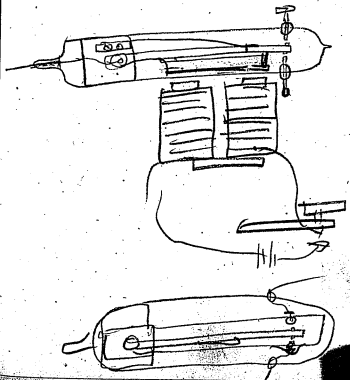


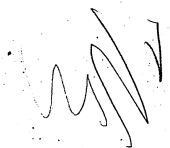
break current  
between mag

April 11, 1886 -  
J. A. E.

Phonoplex quick break

Break ckt in Vacuo





April 11 1886 TAE

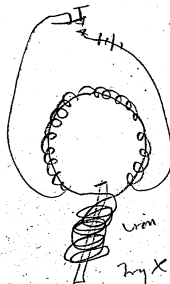
X42

PS

Try closed iron  
magnet & then on  
phone.

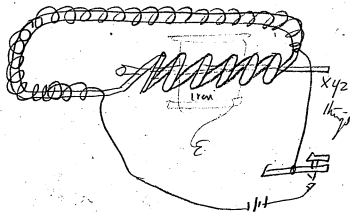


Continuous ring  
no magnetic lines  
outside yet big  
induction see if when  
the current comes  
of (12) the wire poles  
There isn't a moment  
magnetism on closing &  
opening, investigate  
this ring big  
thoroughly



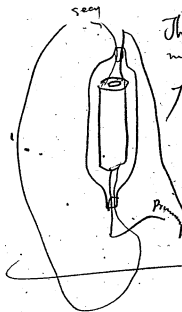
Try X42 things in this

April 11 1886 Var



also see if  $\mathcal{E}$  reconnected,

April 11 1886 TAE



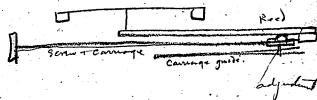
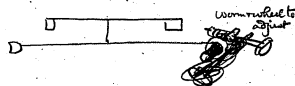
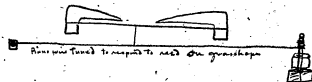
This is in other book  
make this 200 ohm  
secondary to 7 ohm primary  
7 ohm phone coil  
in vacuum high  
see if changed  
gks -

grasshopper Call



Spring Jimmy  
forks -

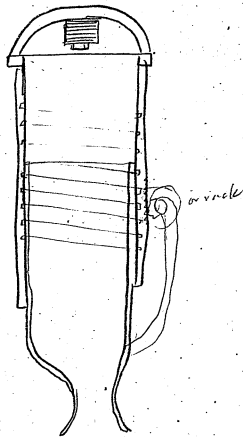
April 12 1886 TAE

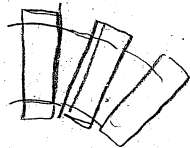




April 12 1866 TAE.

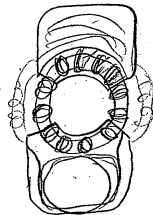
Grasshopper - Receiver with adjustable Chamber  
 so that Column air can be adjusted periodic  
 with the vibration of the reed —



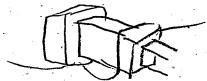


April 12 1886 -

I think Gouck showed me a  
cheap gramme which will use  
the air cooling method of winding  
like that shown in head light dynamos

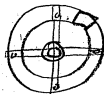


Wound either  
with  $\frac{1}{2}$  lb. of wire  
or right angle  
winding on  
armature



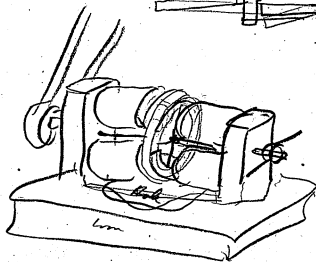
April 12 1886

New cheap Gramme non spkg dynamo



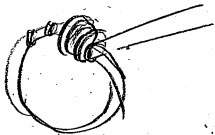
10/1000 sheet now  
rings built up  
with tissue paper

The rings are split and can be sprung  
enough to get coils on



April 12 1886 -

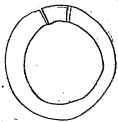
It's doubtful is splitting the  
ring to get coils on is as good  
as a winding machine



Split bobbin run by belt slowly  
& fast - fast to fill it & slow  
to unwind as from core -

---

Have 9  
patents split links  
of all put together  
at one common  
opening then after  
Cord put in  
shift them  
promiscuously

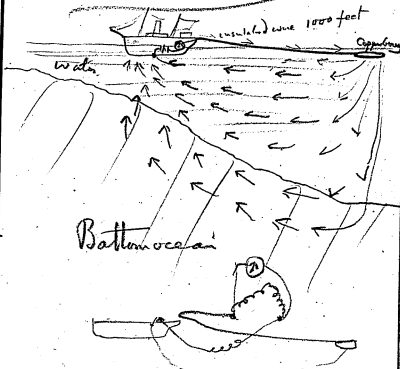


April 13, 1886.

101

JAE

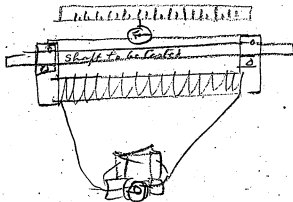
Device for automatically indicating  
depth water on steamers continuously  
also an alarm by gal needle swinging  
to a stop & closing bell at  
ocean str



The device is put in one side of  
wheatstone Bridge

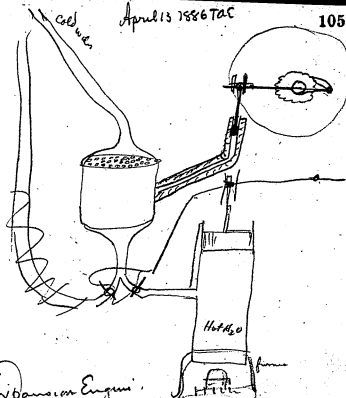
April 13 1886 T.A.E.

Testing quality & homogeneity &  
for flaws of steel iron shafts.



Compass used on a Torsion slider along  
near shaft. if shaft homogeneous  
the zero point will be constant. if a  
flaw there will be a consequent  
pole & produce a dip in the curve  
there are many variations possible  
here -

April 13 1886 TAC

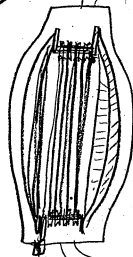


## Expansion Engine.

primary hydraulic pump

big cylinder full copper tubes very  
thin.  $\frac{1}{16}$  in.  $\frac{3}{16}$  6002 cylinder 115-inches  
dia. of iron copper heavy copper ends -  
2 feet long - Hot water 212 let up  
in then run back into hot boiler  
& cold let thro & so on all  
outs = B<sub>1</sub> Sub Carbon or others  
good & probably liquid to  
be used

April 13 1886  
Fal



Hot & cold  $H_2O$   
passed alternately  
through the  
multiple pulley  
Engine

Expansion Engine

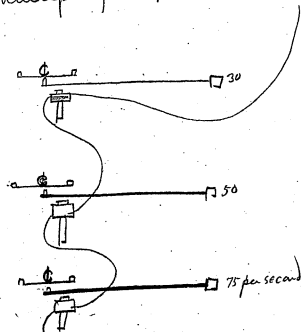




April 13 1886 Tae

On pharoplix Try 2 7 ohm  
 Coils in Series with 8 cells  
 instead of 4 so same  
 amperes pass through both  
 as one - see if this dont do  
 better if not make one  
 sounder with 4 points so  
 they will leave & close  
 exactly & use separate  
 battery & separate Condenser  
 around the sparking point.  
 perhaps the 2 Coils in Series  
 requiring 8 cells causes  
 such high EMF at points  
 that to get rid of spark too  
 much Condensers must be used &  
 then take it from the line  
 but with one sounder separate points

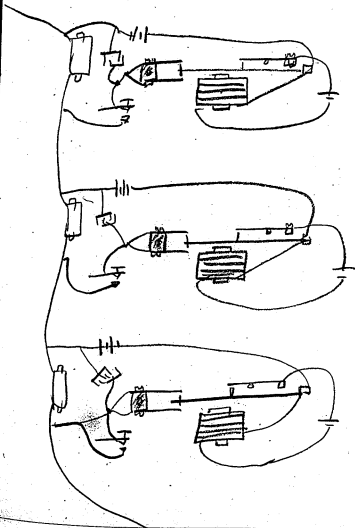
April 13 1886 TAE -  
Multiple phenoplex



Very low notes  
lower than this if  
possible —

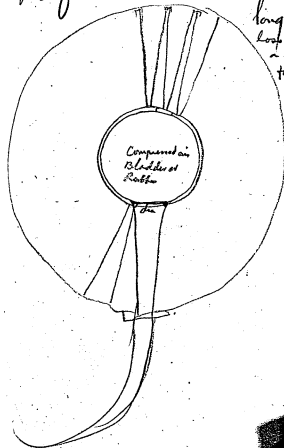
Other page for Sander

April 13 1886  
multiple phonograph



April 14. 1886 TAE

Draf —



long funnel no  
loop - you get  
a bigger chamber  
for reversion

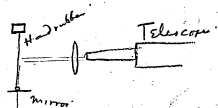
April 13 1886 TAE -

Try dissolving Licorice in heated Linseed oil - then coat tan foil with thin layer dry ~~is~~ naturally. then recoat till get it 10/1000. Then put in hot oven & keep 48 hours -

also try linseed films.  
Compound <sup>(c)</sup> many films in one & use hot oven. The reason previous experiments with films didn't work well was that they were only naturally dried while they should be dried by hot oven slowly raising heat.

also try tissue paper uncollendered & collendered no holes dip & dry naturally & then bake slowly with high fuel in oven.

April 14 1886 Tar.

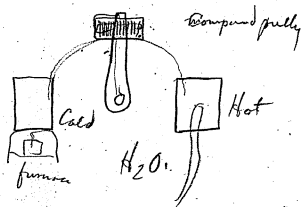


beam light from star

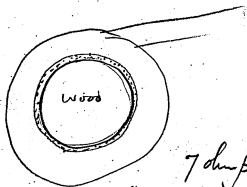
25-foot scale -

April 14. 1886 Taz

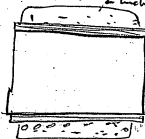
Drops are then the then



April 14 1886 Tae



7 diam phonex  
 grown laid length  
 on 2 inch block wood



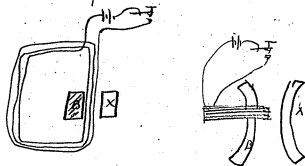
same quality  
 iron wire on  
 reg with  
 Cop wire  
 wound

Length 3 in

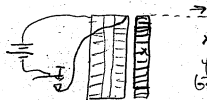


April 15 1886 PAE

Try some fundamental experiments on lines of force. The present theory don't seem to explain certain Expts.



B + X don't see if X magnetized - fso  
if its proportional -

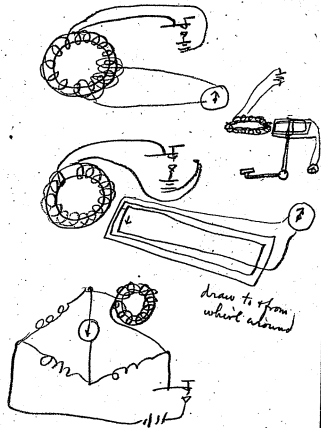


X don't see if magnty  
fso the proportion  
between it and  
when in Center.

also move it by  $\frac{1}{12}$  outwardly  
as the arrow measure  
relative strength

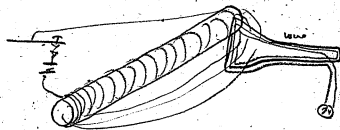
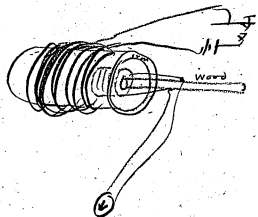
April 15 1886

Fundamental magnetic Expts



April 15 1886 TAE

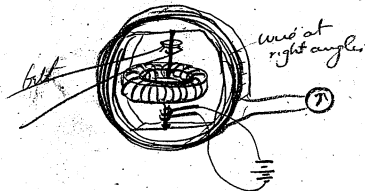
Fundamental Magnetic Expts.



move in every direction  
+ plot the strengths of  
induction

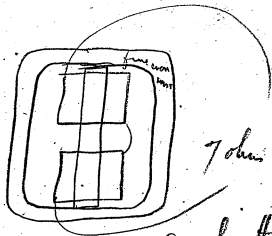
April 15 1886 TAE

Fundamental Magnetic Experiments

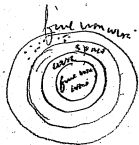


April 15 1886 TAE

Phenoflex Coil



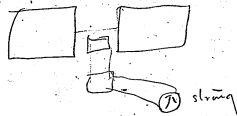
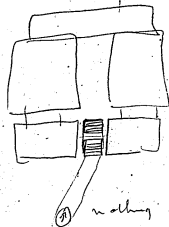
Same length as  
regular



This is length then  
line force & more  
powerful than that  
line force drawn  
inward

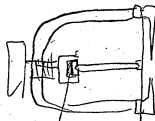
April 15 1886 TAE

## Fundamental Magnetic Experiments



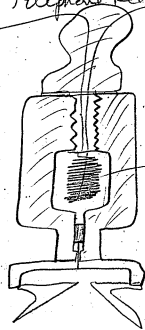
April 15 1886 TAE

Telephone Receiver



diff substances, pressed chalk line  
 & every other salt, dry & also  
 moist, EMG action,

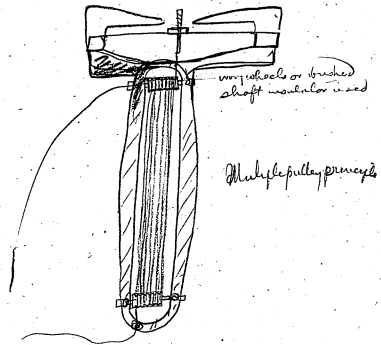
April 15 1886 TAE

Telephone Receiver100 ohm  
Liquid greatest  
expansion

Hydraulic principle

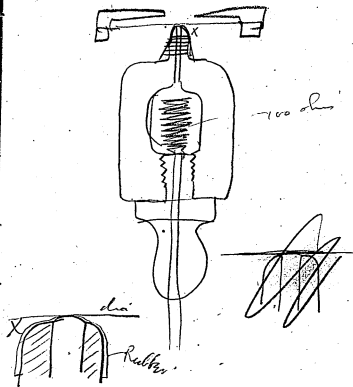


April 15 1886 Tar.



April 15 1886 TAE

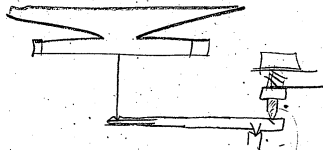
Telephone Receiver



April 15 1886

Tae

Telephone Receiver



all that is necessary is  
leverage on the class  
of receivers —

The Telephone  
Receiver  
Is a lever etc.

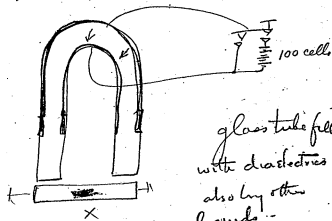
April 15 1886 Tae

XYZ

If the molecules of an element like a metal is effected when a line of magnetic force strikes one side of the wire, giving a Current in one direction & when merely allowing the line of force to strike the other side a reverse Current, Then it is very likely that Compounds (not elements) should be effected different. hence dynamo mac wound with Hard rubber - tubes containing liquids instead of wire & moulded solids in wires or rods like peroxide etc —

April 15 1886 -

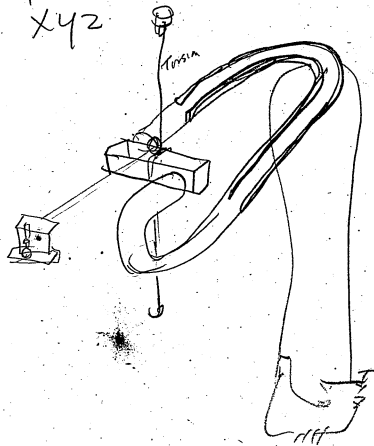
XYZ



glass tube filled  
with dielectrics  
also by other  
liquids -

Cutting with E lines of force at  
right angles ought to produce  
another form energy along the  
Compound & thus produce an  
attraction. X is trough containing  
same liquid or others - also  
all solids & metals, try  
dif ends & as some way be now  
condors of XYZ - try metals  
a better device next page

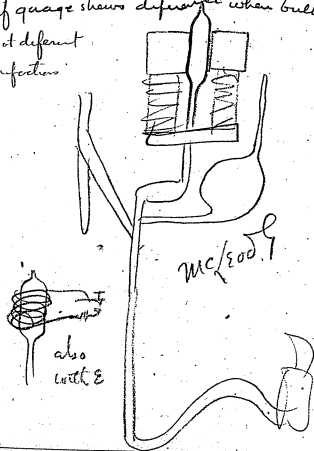
April 15 1886 TAE  
X42



April 15 - 1886

## Fundamental Mqtc Expt

ascertain when a fair vac is obtained  
 if gauge shows difference when bulb magnet  
 by at different  
 rarefactions



April 16 1883

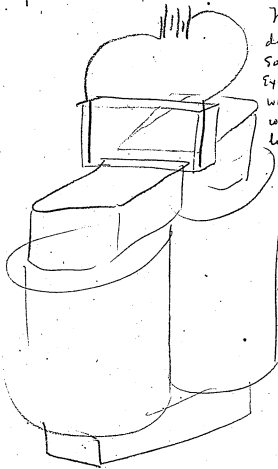
Trough containing  
different Conducting  
Solutions -

Expt is to see if  
with dilute Sol<sup>s</sup>  
whether the weight  
lines will not

cause the attraction  
of the Electric  
lines is  
with it the

conducting matter  
concentrating

The liquid may  
may be leaving  
only pure water  
in top of cell

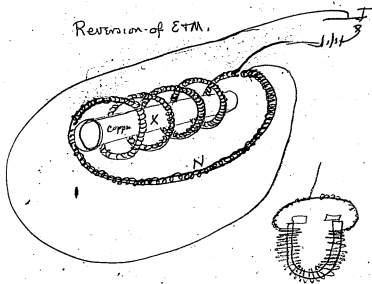




April 16 1886 - TAE

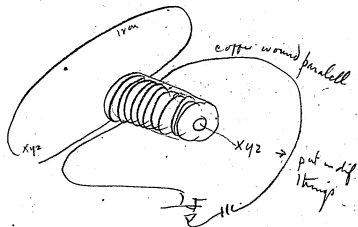
XYZ -

Revision of ETM.



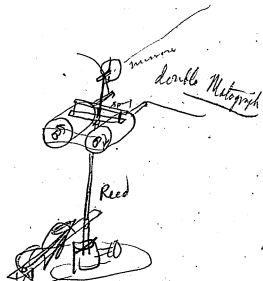
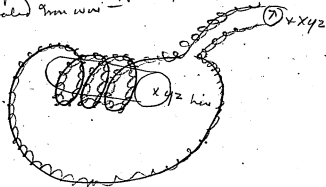
a Copper horseshoe wound  
 with several layers of softest iron  
 wire  $\frac{1}{2}$  thick over the whole length  
 of which is wound insulated wire  
 & charged powerfully with battery.  
 Export for XYZ but Copper poles

April 16 1886 T. A. E.



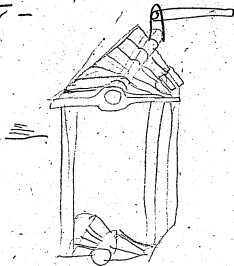
April 18, 1932  
X42

Copper wire wound spirally with  
insulated 9mm wire -



April 15 1886 Tal

Gasimotor -



April 16 1886 TAR

Air Telegraph -

Barometer at Geneva being

27.08 on top Mt Blanc

15732 feet above sea was

~~16.08~~ 16.08. correct Genevaby Sea Level. Then Experiment  
on long Vacuum tube forconducting vibrations from 7 ohm  
phonograph coil to telephoneat different pressures use  
regular Hg Gauge as McLeod  
not required -

$$\begin{array}{r}
 27. \\
 \underline{11} \\
 5.4 \\
 \underline{27} \\
 8 \overline{) 32.4} \\
 \underline{40} - \\
 \underline{4} \\
 76.0 -
 \end{array}$$

140

$$\begin{array}{r}
 125. \\
 \underline{70} \\
 875.0
 \end{array}$$

April 16 1886 TAE —

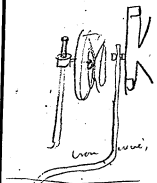
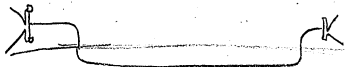
On Top Mt Blanc difficult  
to make yourself heard  
The Barom 16.08, hence

The Compressed air for Deaf  
Device & in long speaking  
Tubes is ok —

Try Alcohol or other liquid  
instead Compressed air in  
fish bladder —

April 16 1886 - T O Z 169

= Invented putman within + work up system  
of man underground telephony - no electricity -  
In water a bell is heard 45,000  
feet which in air can only be heard  
656 feet, Vel of sound in Water 4900 per  
sec from 17,500



iron wire suspended by  
strings in a box  
in the Earth only  
transmit the sound

Molecularly not move  
The whole wire and so  
just bury in the Earth  
see how far can  
transmit -

Try different forms of hammer & receiver

April 15 1886 - T.C.E.

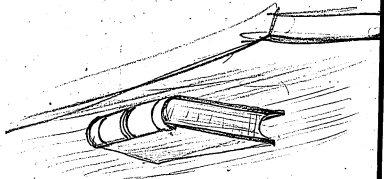
## Bronze Non-E Telephone

Perhaps the buried wire could be wrapped with loose cotton laid lengthwise, + slightly braided over to hold it in its place - This would prevent transmission of vibrations to outside matter,

Experiment to find a non-conductor of sound from an iron wire to matter around it -

glass tubes or even lead tubes with fine piano wire in 200 feet lengths could have a vacuum in it permanently + the joint be made an elastic one so vibrations would be carried for miles

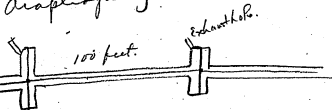


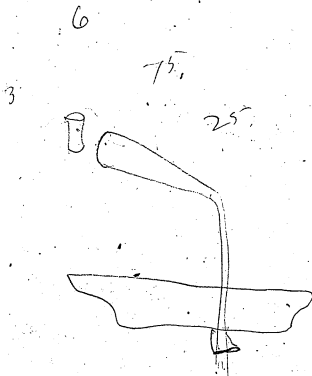


April 16 1886 TAE -

Iron wire Non-E Telgham

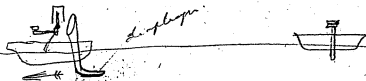
The lead pipe or glass pipe or even  
Copper with fine wire could have a  
diaphragm joint



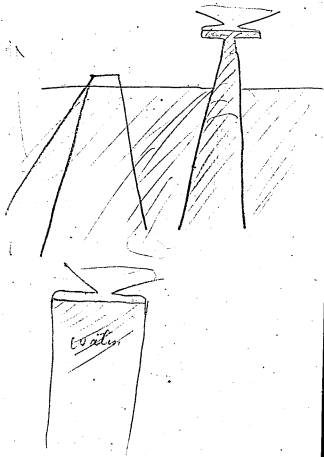


April 16 - 1886 TAE -

# Telegraphing at sea



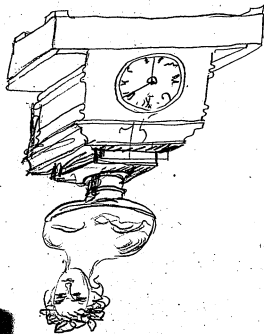
as sound will travel 50 times further  
in water than air - I propose to  
run from a steam whistle are large  
funnel & tube to water under the  
steamer the End is provided with  
a diaphragm; or not as Experiment will  
determine - by cutting whistle into  
breaks we have dots & dashes which  
are composed of vibrations, these  
are communicated to the water.  
on another ship a tube runs up from  
the bottom of vessel with water in



April 16 1886 ~~1886~~ TAE

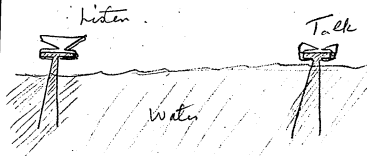
Marine Telegraph

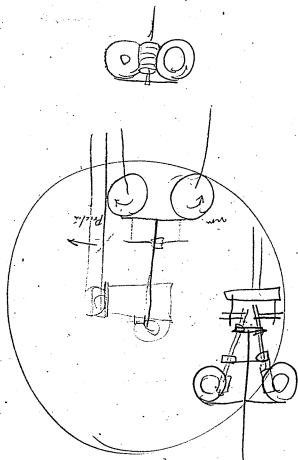
or a diaphan is on the end and a thread passes up to another diaphan to receive the impulses. Thus, each vessel being provided with sending and receiving apparatus communication can be had a distance probably of 25 miles, a screw, or heavy vibrating fork may be arranged to give vibrations to the water,



April 6 1886 TAE

Expt in water telephone transmission



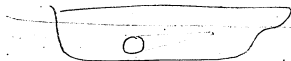


April 16 1886

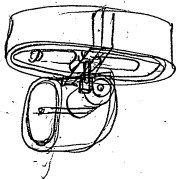
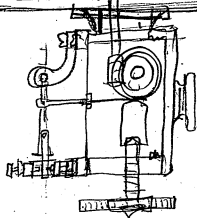
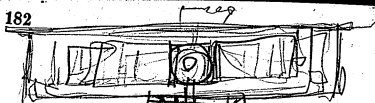
Mannie Telgh



x funnel 50 feet long closed  
on end but full water. (closed by  
partition etc.

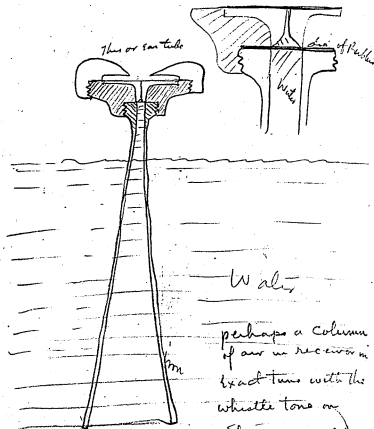


also diagram in side of ship  
deep down + long funnel inside  
ship to concentrate hole 2 foot or 4  
feet in area covered of water holes diagram



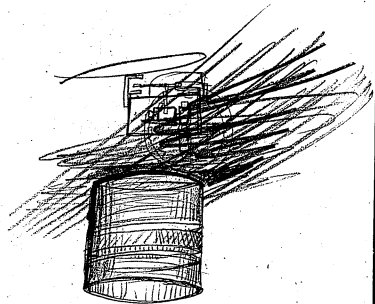
April 16 1886

## Water Telephone Receiver



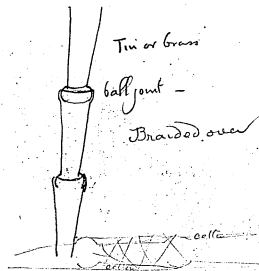
Water

perhaps a column  
of air in receiver in  
exact tune with the  
whistle tone on  
Steamer would  
help



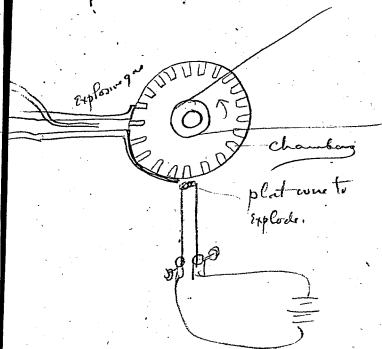
April 16 1886 TAE

Flexible Ear tubes of metal



April 15 1886

Explosive Siren





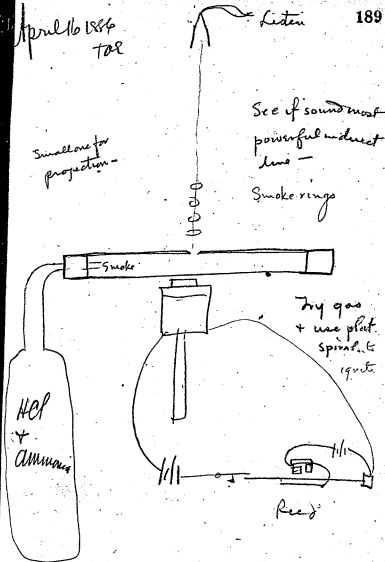
April 16 1884  
Tae

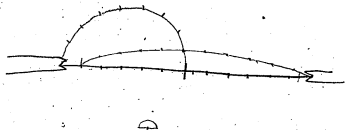
Small one for  
projection -

Listen

See if sound most  
powerful indirect  
line -

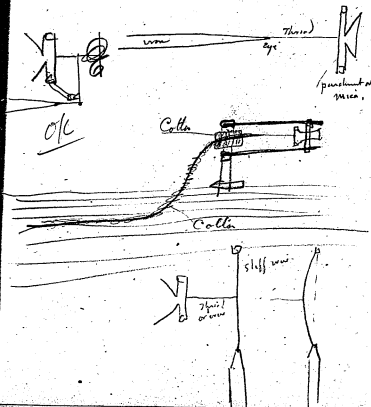
Smoke rings



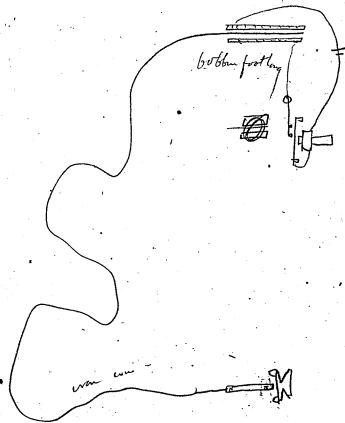


April 16 1886 TAE

Molecular Receiver from iron wire  
import telephone N.W.-E.

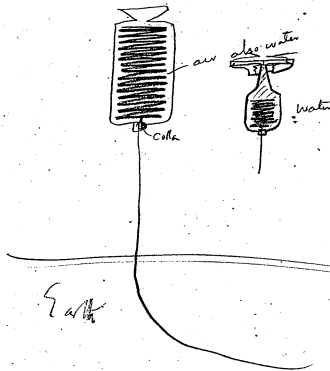


April 16 1886 Tal



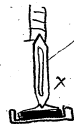
April 16 1886 TAE

Molecular recorder



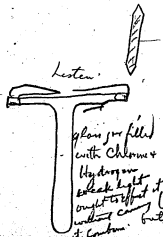
April 16 1886  
Tae

True photophone



solution used for negative  
damp by light.

beam focused  
each flash produces  
a damp +  
vibration to X



This under pressure  
Coated with Collodion  
+ silver salt - also  
Bichromate of Potash  
Effect Light to produce  
Change which  
must either increase  
or decrease tension  
on surface to beam  
transmitted to Carbon  
button + telephone at each flash

April 16 1886. —

mfr of Silk <sup>my</sup> Gum Chiclé

199

glue mixed with Bichromate of Potash  
proper proportion & made in cylinder &  
placed in larger body of Hydrocyanic  
acid - soften & pull out.

afterwards dissolved in Carb. - Exp. can  
fine filament of gelatine to light.

Bases - Collodion - Cupric Ammonium  
paper - gutta serena - Balata -

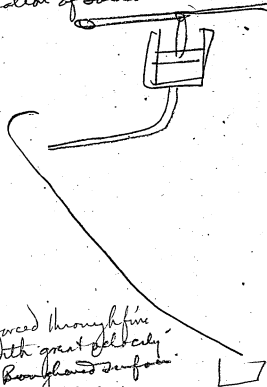
Rubber dissolved in Benzol or  
Bisulphide of Carbon into which Rosin &  
various other Hydrocarbons dissolved  
until ~~the~~ Reductant film Rubbr.  
has slight elasticity. - Exterior  
can be glue - Licorice - Melasses

Candy & fibres natural continuous  
length be made by working over &  
over the Candy with Rubber Rosin  
core & then dissolving in hot water

McQueen says strong  
glue of acetic acid. - exchange glue  
to rosy mass drawn out silky threads  
its actual surface with Bichromate

April 16 1886 TAE

Separation of solid matter in Milk



Milk forced through fine  
hole with great velocity  
again Bonpland surface  
The break Globules &  
unbreakable ones pass  
down incline quickly

April 16 1886 JAE

## Separation Cream from Milk

Try Graham's Dialysis - use  
also Electricity thro porous  
diaphragms.

Use porous diaphragms various  
~~thicknesses~~ isolates -  
use Vacuum underneath

use air pressure on one receptacle  
to free pores of globules & next  
receptacle use Vacuum to draw  
water of milk through -

Evaporate in Vacuum -

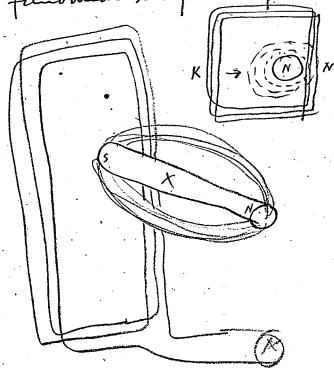
Freeze the  $H_2O$  -

Try filling through long tubes  
filled with fine particles. use  
Vacuum to draw - Centrifugal  
through porous substance



April 16 1886 TAE

## Fundamental Magnetic Expt



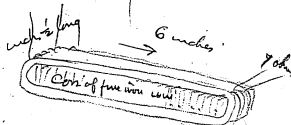
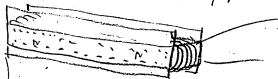
X Steel Mag-move to from N  
 toward R but not enough so K  
 will come within range of lines of force  
 want to ascertain if its the drawing in toward  
 may not of balance of forces or not.

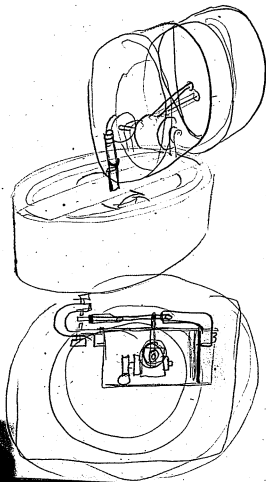
April 16. 1886 TAE.

Phonoplex Coil, sheet wound  
as shown



use four copper wire  
paraffined to us between  
wind it 2 inch thick  
Core being  $\frac{3}{4}$ " - fine iron wire.

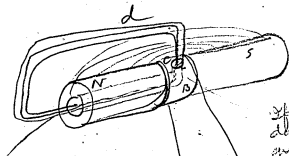




April 16 1886 Sat

Fundamental Phys Expt

Fardays-

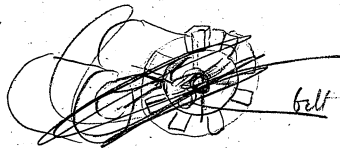


If the iron  
does not act as  
guard-brush  
with thick  
brush of copper  
mounted on  
everything through  
which wire  
passes  
also not  
insulated



Revalued -

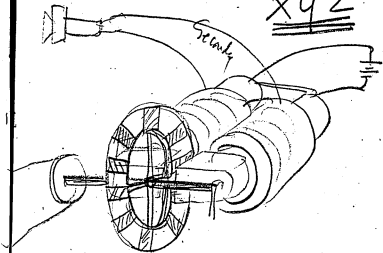
see if B is good  
guard.



April 16 1886 TAE

Fundamental Magnetic Experiment

XYZ



a powerful permanent magnet  
would be better or The primary  
only in one side of a bridge <sup>stat</sup> <sub>from</sub>  
in 6 diam wire The wheel is  
rotated with great velocity. +  
at different spots has a piece of substance  
or cell with liquid to see if there is any  
that will retard magnetism See 215

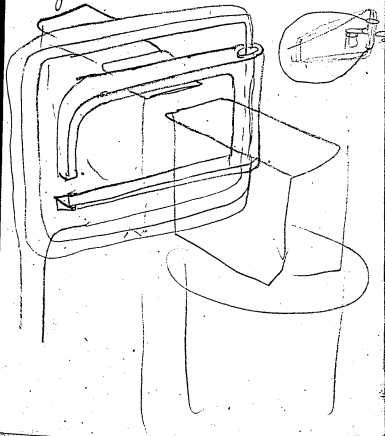
April 16 226 Columbus

XYZ

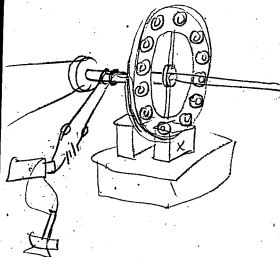
If any substance will disturb  
the lines of force and the wheel is  
turned sufficient fast to give  
a musical note it will be  
heard in telephone, now if this  
disturbance is created without  
the production of electricity or  
magnetism, then we have  
a new form of energy

April 16 1886 TAE

Fundamental Experiment  
pull thro. with & with heavy Copper  
guard closed -



April  
xyz



Electric pen spools no mag  
X liquids & substances  
to see if the electric field is  
disturbed,



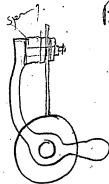
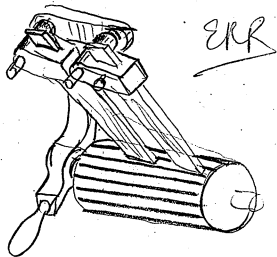
April 16 1886 TAG

Milk -

Try desalting out butter oil  
with Bisulphide <sup>Calc</sup> Etc - then Evap Bis<sub>4</sub>

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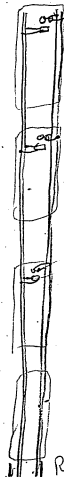
April 16 1886. TAE



Brush device  
for Motors that  
reverse direction  
of rotation

April 17 1886.

Electr



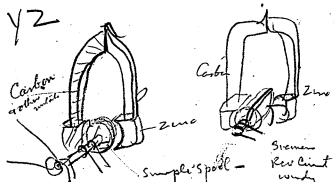
Work up idea  
of accelerating  
bottom to work a  
Centrifugal clutch  
moving in & out

ampl  
field

Reversing? Centrifugal  
clutch

April 17 1886  
Tae

XYZ



Wound wire on hand rubber  
+ other substances



The particles between  
Z & C become  
changed & ought  
to give something

Cylinder  $\frac{1}{2}$  Zinc  
 $\frac{1}{2}$  Carbon or Copper  
Wire wound perpen  
to right angles.

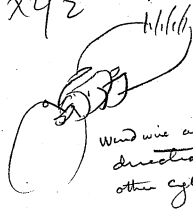
April 17 1886 TAE  
X42

If Electricity passing in a wire  
is given off a heat, Then a  
wire under some kind of polar  
environment give off electricity  
when the same is conducted  
along it from high to low  
temperatures

Appen of heat to a wire &  
allowing it to conduct  
to form a magnetic  
field ought to give electricity

April 17 1886

X42

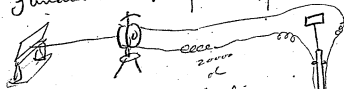


100 cells.

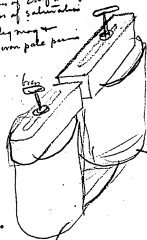
Wind wire also sheet both  
direction - Rubber &  
other cylinder

April 17 1886 TAE

# Fundamental Magnetic Experiment



Determine accurately relative  $E_{\text{eff}}$  with the poles  
at different positions in the plot curve — 39-inch peak  
also substitute magnets with exactly same  
poles but diff length make curve — also  
curves of  $E_{\text{eff}}$  at different distance apart with diff  
degrees of saturation  
also try mag —  
Cast iron pole piece



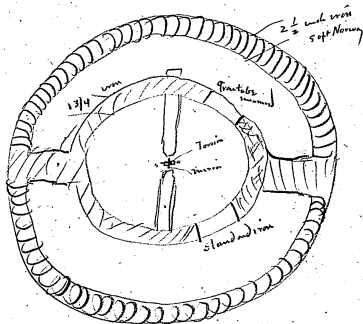
Try pole pieces  
diff kinds & shapes  
also to ends etc.



Ampere meter

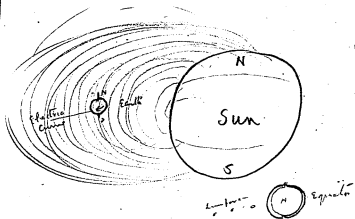
April 17 1886 TAE

Fundamental Magtc Expt  
Magnetic bridge





April 17 1886 T.O.E.



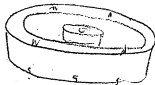
The earth revolving around the sun  
 Cut the lines of force so the current  
 tends to pass around both sides of  
 it this would neutralize & give no  
 effect were it not that one side  
 of the earth is heated & this gives  
 direction to the current around  
 the equatorial belt, this  
 makes the magnetic poles

April 7

and The electric Current & consequent magnetism causes the attraction to the sun the Orbit of the Earth is the point where the tendency to go off in a straight line is balanced exactly by the Mutual attraction of the electric Current Magnet of the Earth & magnet of the sun.

April 17 1886  
Telephone

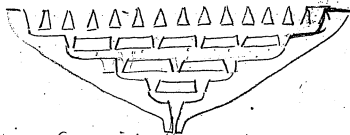
Quick discharge



$$\begin{array}{r} 14 \\ 14 \\ \hline 56 \\ 14 \\ \hline 196 \end{array}$$

$$\begin{array}{r} 36 \\ 11 \\ \hline 200 \end{array}$$

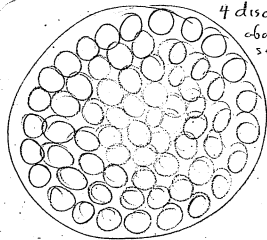
April 17 1886  
Drab.

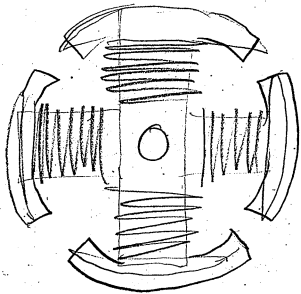
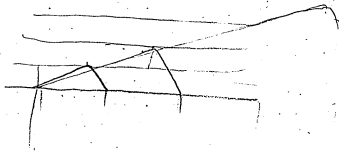


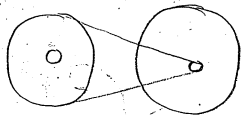
Ean pecci

Coned holes

4 discs first  
about 100 cones  
second 10 cones  
3rd —







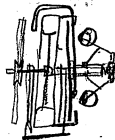
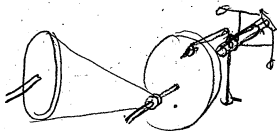
5 inch = 15-

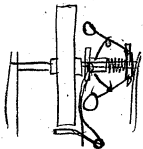
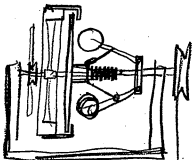
1 inch equals 3 inches

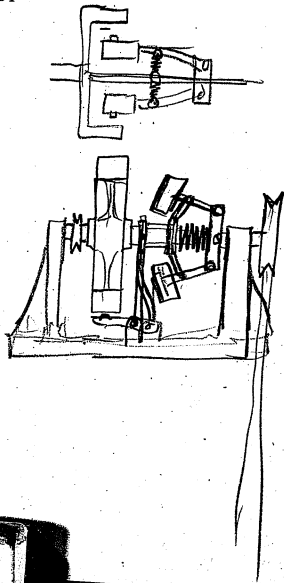
5 to one - 6 inches

1 per second. 18 inches  
 $\frac{18}{90}$

$2\frac{1}{2}$   
 $7\frac{1}{2} \times 90$

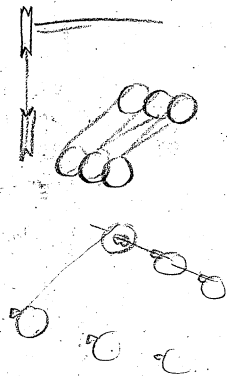
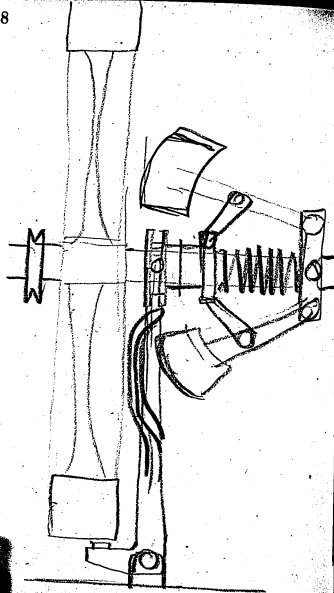


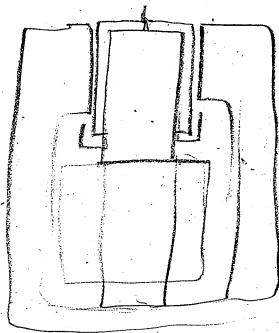
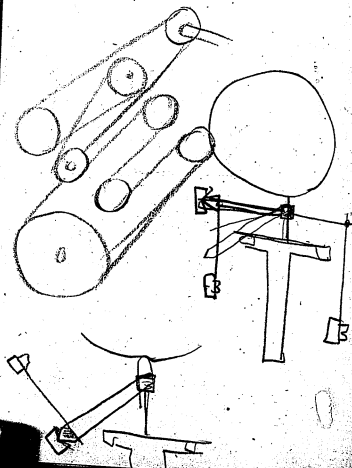


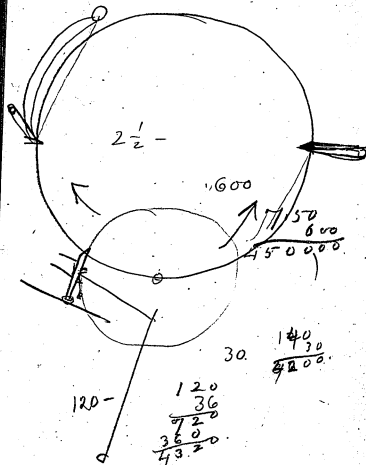






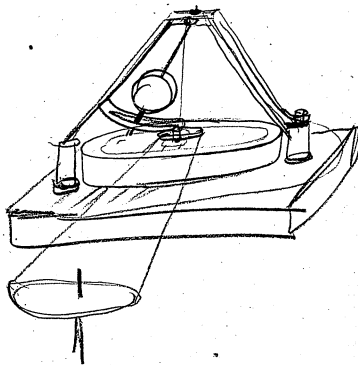


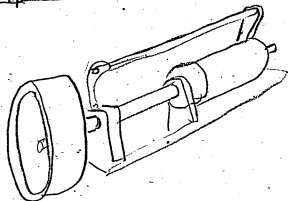
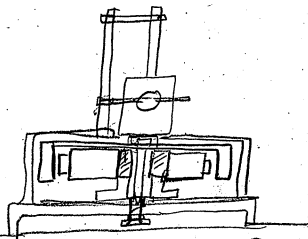


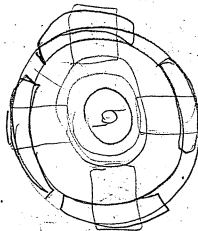
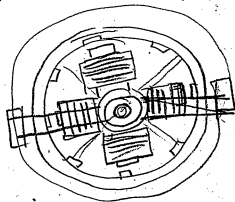
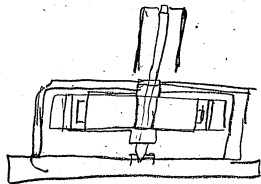


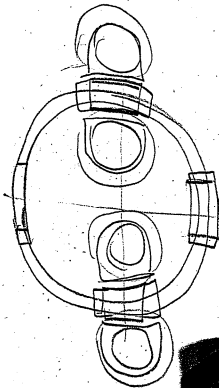
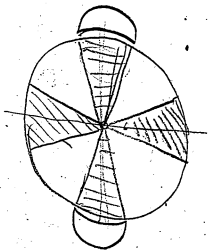
$$\begin{array}{r} 140 \\ 30 \\ \hline 4200 \end{array}$$

$$\begin{array}{r} 120 \\ 36 \\ \hline 720 \\ 360 \\ \hline 4320 \end{array}$$

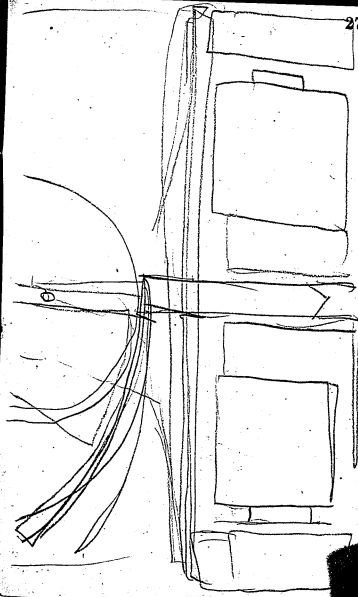
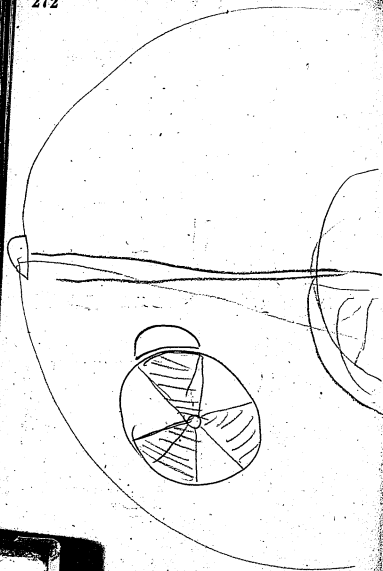












C

P

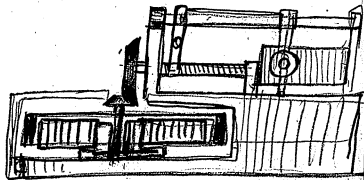
P

P

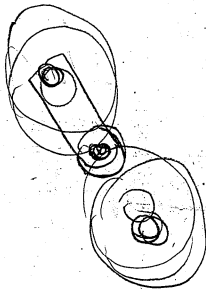
P

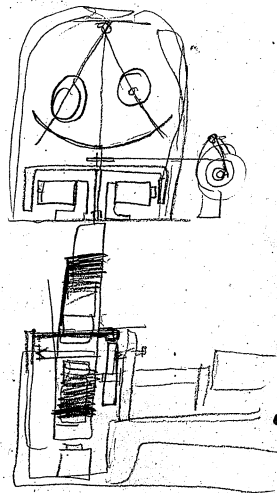
P

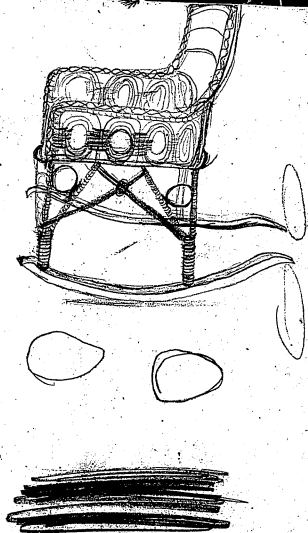
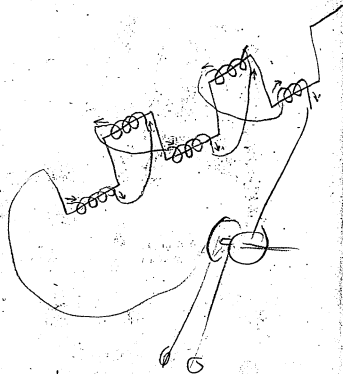
Photograph



Phonograph







**Fort Myers Notebook, N-86-04-05**

This notebook dates from April 1886 and contains notes by Edison to Eli Thompson, who was in charge of preparing the Fort Myers home. All of the notes relate to plantings for the grounds. Included also is a drawing of the layout of the house and grounds. The front cover is labeled "T. A. Edison Memo. Book." The book contains 284 numbered pages.

Blank pages not filmed: 2-3, 46-47, 54-57, 60-284.

N-(86-04-05)

Found 11/15/66 in wire cage  
in Vault 8.



5  
Mr Thompson - I will require 280  
lighter loads of muck to cover 8  
acres 4 inches deep - Each lighter  
load 30,000 lbs, or 8,000 cart loads. 1000 lbs  
each - or about 15,000 5-ton loads on Wood wheels  
We shall want a Banana Bed about

20 feet square. You can probably  
buy these, I noticed up by the wind  
mill on the island up in the narrow  
channel of the Calakousehatchie,  
lots of bananas bushes;

Shall want about 1200 pineapples;  
I believe there are two ways of  
planting; one of which is longer but  
sure, sure, plant ~~the~~ <sup>this</sup> kind -  
in garden across road  
... ordered them of Montgomery  
fruit & large -



~~Set out towards woods two ponciana~~  
~~Trees~~ It might be best in cases  
 like this to set out duplicates very  
close together at the end of a  
 year if both should grow the  
 poorest one can be cut down, this  
 will insure having at least one,

I think we should have a lemon  
 hedge inside fence towards woods.  
 The lemons ~~procured~~ <sup>here</sup> seem  
 to be a poor variety. if ~~you~~ <sup>we</sup> cannot  
 procure the regular ~~Italian~~ <sup>Regina</sup> lemon  
 shoots ~~elsewhere~~ <sup>of course</sup> the slips  
 yourself from seeds found in  
 the lemon we have north then  
 you will have to use the lemon  
 + lime (The lime seems to be good)

procurable here.

I saw near Jacksonville some very fine Pecan trees, please see if you can propagate slips from the nuts procurable from the stores, also, - propagate also soft shell almonds Brazil nuts, Date palm from Dates procurable in stores, English Walnut, Filberts, -

Procure some fig tree slips, and set out about  $\frac{1}{2}$  dozen - put them out towards the old house as they are an ugly tree, I don't know if there are any fig trees around here if not perhaps you will have

to get them from Jacksonville  
where there is a nursery - Major Evans  
will tell you about the nursery there  
and what you can get there,

As peaches grow in perfection down  
here, ascertain what period of the  
year when the season is not  
backward that the peaches ripen  
if they ripen as early as April  
25 - or May 1st set them out,  
perhaps there is an early variety  
1/2 dozen trees will answer;

What time do grapes ripen here  
if during our stay which will be  
hereafter from January 15 - to  
May 1st - set some out

We want a strawberry patch.  
 about 20 by 100. of best early  
 bearing Strawberries - also  
 about 25- Current <sup>garden</sup> bushes, also  
 a bed of Red and Black Raspberries  
 mixed. I think ~~a~~ a bed about

20 X 100 will do for both,

4- Caplin Beans

5- Olives,

5- Jamaica Apple

5- Egg Fruit.

About 10 Mangos

" 10 alligator pears, House <sup>Shrub</sup>

10 Sapindillos

2 Spanish gooseberry

Frierson had one tree last year

4 paw paw trees  
 Landscape -

- 6 pomegranates,
- 2 mulberry native,
- 2 custard apple,

I think <sup>as many</sup> ~~10~~ orange trees of best  
 variety <sup>as will go on end of Horse plot well as in</sup> will do us on the grounds  
 as I propose to plant some  
 across the road - plant a lot  
 in garden in case we want to transplant

$\frac{1}{2}$  doz Guavas if they  
 bear during our season if not  
 one will do -

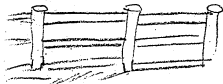
I think you better plant some  
 peanuts so as to obtain about  
 3 bushels for our use -  
 garden

I wonder if plum pear +  
Siberian Crab will grow here  
if so put out Couple of each  
Landscape

I will send you from New York  
on my arrival several good  
books on floriculture + horticulture  
etc, also as soon as possible  
ship you a full ~~catalogue~~ of  
assortment of seeds and  
bulbs. I think about 1800  
varieties — also will send  
you a supply of good garden  
truck seeds, the later you

Can plant at such time as  
will insure us a good &  
regular supply for the  
table during our stay -

I propose to have 4 acres  
cleared across the road and  
a board fence put around it  
thus,



The garden truck & propagating  
beds can be placed over here;  
you should set out plenty of  
extra slips over there so in  
case of a failure on the River  
side lot of a shoot you  
can transplant.

I suppose Cotton seed will  
sprout & grow in this part  
of the Country any time  
if so plant so we can see  
some while here say 10 or



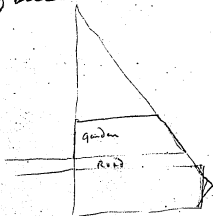
15 hills -

I think perhaps the strawberry  
bed might go across the  
road. -

You better use some of the  
space across road to  
experiment with or different  
fertilizers -

You are authorized to have  
about 4 acres cleared  
which I understand is

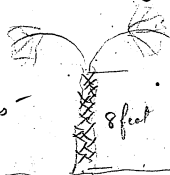
man who has charge of  
 the place next to old house  
 will do for \$35 per acre  
 now I want it perfectly  
 clear of everything ~~except~~  
~~the large trees~~, even if it costs  
 more - you are also  
 authorized to build a board  
 fence around the whole



I shall send you every kind of  
grass seeds so you can  
experiment in small patches  
in the garden.

Also procure 4 Cabbage palms etc.  
about 8 feet from the ground  
to where the leaf rods come  
out

Set them  
out on  
grounds -



Lattice work.  
Complete from  
ground to top

What I desire in the flower line  
is a few nice ones - of every variety  
that I can procure,

you should carefully study  
the books I send relating to  
the care & planting of the  
flowers,

I will send you about  
1000 yards of common print  
cloth, which you can place  
around the more tender  
shoots when a freeze approaches  
This cloth will prevent radiation

If run through boiled linseed  
oil & hung out until dry  
it will prevent radiation  
almost entirely -  
will also ship barrel of  
boiled oil -

We propose to have on ground  
the best manured in Florida  
Therefore you may order  
for the River grounds, 6 ton  
of oil cake, two ton of  
phosphates, and two ton of  
guano - and for the garden  
4 ton of oil cake, 2 ton phosphates

and 4 ton of guano,  
 providing the guano does  
 not cost more than \$50 per  
 ton =

I think you should go back  
 from the river & look for  
black muck. fresh water  
 muck, There are plenty of  
ponds back of Myers which  
 appear to have black ground  
 you can hire a cart or  
 use the lighter & yacht and  
 get it up the river wheeling  
 it to light by wheelbarrows  
 & line of boards

It evidently wants some fine  
 decayed fibrous spongy  
 matter like they are putting  
 in the Coconut hales to  
 hold the manure & prevent  
 it going clear through to  
China - You can doubtless  
 discover a good spot to  
 get it which is accessible  
 don't stint it but procure  
plenty of it - I want to carry  
 Everything to <sup>Extreme</sup> Excess down here  
 You will probably have to  
 pay the owner of the  
 ground for it. —

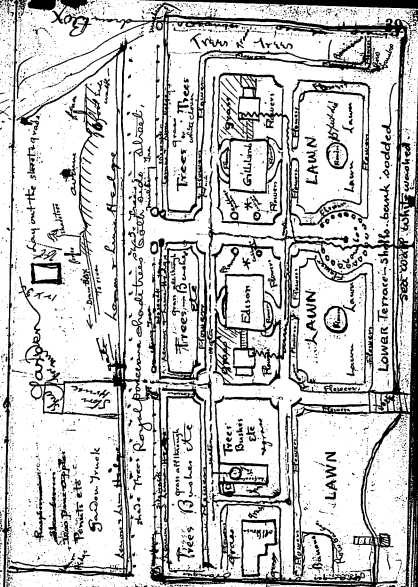
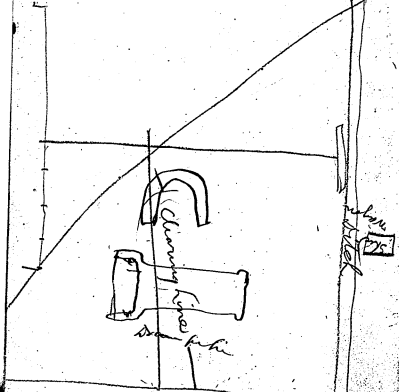
I think you better get  
 some better shoots of Bamboo  
 from Major Evans and  
 plant them keeping them  
 well manured + watered,

---

If Cherry trees will grow  
 put out 2 or 3, oxheart,  
 Red etc

2 - grape fruit trees





Plant in garden about 20 ft  
square of Tobacco - garden

---

4 Trees of Japanese plums  
in House plot -

1/2 dozen gooseberry bushes  
House plot,

2. apricote trees House plot,

2 persimmons "

2 Tamarind "

2. ~~mulberry trees outside~~  
~~in street as shown on map.~~

any tropical fruits you  
 hear of get shoots. if you can,

~~2~~

Among the Oranges get at least  
 2 Mandarin Orange trees,

2. Green gage plum in Home plot

20

In garden set out a double row  
sugar cane 50 foot long -

Plant in garden dozen hills  
of poor mans dish rag -  
its a species of squash  
plenty at stagnation,

Want ~~two~~ hives of ~~bees~~  
bees <sup>near my garden</sup> for our flowers, you  
can purchase these about  
2 1/2 miles from Myers on  
the river road to Parkinsons  
or up the river above Parkinsons

$$\begin{array}{r} 75 \\ 600 \\ \hline 45000 \end{array}$$

40

400

350

$$\begin{array}{r} 350 \\ 175 \\ \hline 3325 \end{array}$$

40

$$\begin{array}{r} 525 \\ 75 \\ \hline 2625 \end{array}$$

$$\begin{array}{r} 2625 \\ 3675 \\ \hline 75 \end{array}$$

75

$$\begin{array}{r} 493 \\ 3660 \\ \hline 7320000 \end{array}$$

$$\begin{array}{r} 3660 \\ 7320000 \\ \hline 2000 \end{array}$$

2000

$$\begin{array}{r} 43000 \\ 162000 \\ \hline 210000 \\ 783000 \end{array}$$

$$\begin{array}{r} 200 \\ 40000 \\ \hline 40000 \end{array}$$

$$\begin{array}{r} 183000 \\ 732000 \\ \hline 915000 \end{array}$$

$$\begin{array}{r} 3660 \\ 7320000 \\ \hline 2000 \end{array}$$

1500 fans

$$\begin{array}{r} 15 \\ 1200 \\ \hline 1800 \end{array}$$

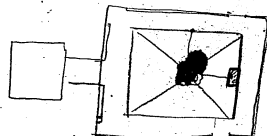
$$\begin{array}{r} 80 \\ 600 \\ \hline 600 \end{array}$$

$$\begin{array}{r} 15 \\ 1200 \\ \hline 1800 \end{array}$$

$$\begin{array}{r} 15 \\ 1200 \\ \hline 1800 \end{array}$$

160

Edison House





$$\begin{array}{r}
 15 \overline{) 4300} \quad (280 \\
 \underline{300} \\
 1300 \\
 \underline{1200} \\
 100
 \end{array}$$

8

$$\begin{array}{r}
 4300 \\
 2000 \\
 \hline
 8600
 \end{array}$$

2000

$$\begin{array}{r}
 43000 \\
 20000 \\
 \hline
 34000 \\
 20000 \\
 \hline
 172000 \\
 86000 \\
 \hline
 86000 \\
 86000 \\
 \hline
 172000
 \end{array}$$

4

2

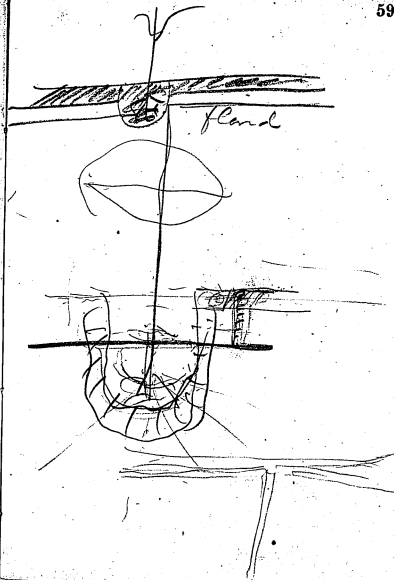
$$\begin{array}{r}
 25 \\
 9 \\
 \hline
 225
 \end{array}$$

15 ton for Lighter Load -

25-lbs per square foot,

4300 tons,

280 lighter loads





**Fort Myers Notebook, N-86-04-07**

This notebook covers the period April-May 1886. All of the entries are by Edison. Many of them concern the direct conversion of heat into electricity, the lines of force of the earth around the sun, and atomic and molecular structure. Included also are notes and drawings relating to armature windings and connections, the phonoplex, the grasshopper telegraph, the tasimeter, electric railways, an archimedes screw to propel a steamer, the manufacture of silk, and the separation of butter, cream, and water from milk. The spine is labeled "28." The book contains 286 numbered pages.

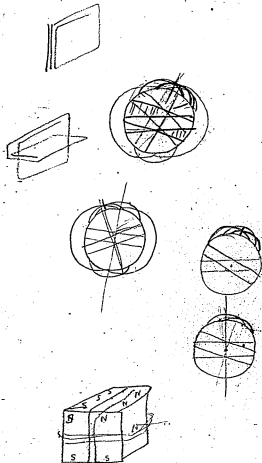
Blank pages not filmed: 42-43, 92-99, 214-215, 242-243, 276-286.

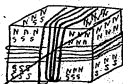
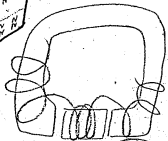
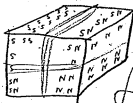
Missing page numbers: 17-18, 263-264.

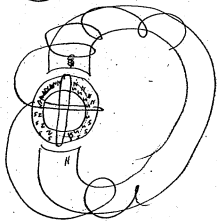
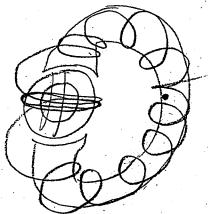
XE-172

N-86-04-07

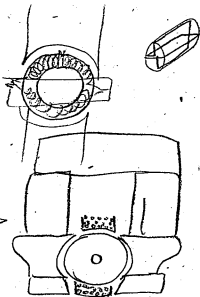
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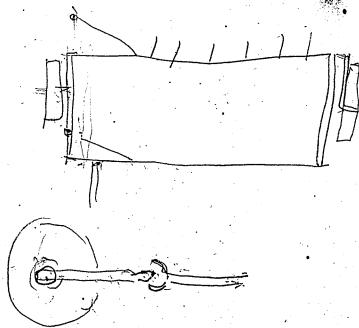
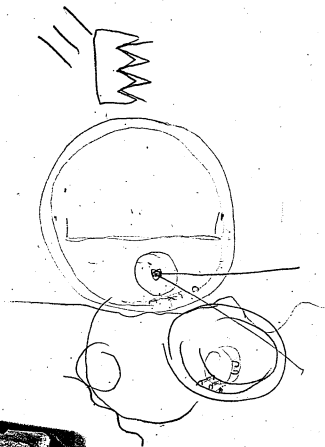




April 7 1886 Tae



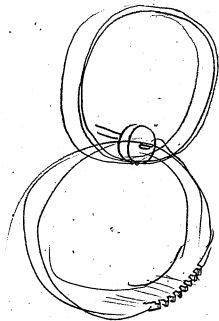
Wind each turn round then before  
going to turn wind at right angles -  
then each loop will be practically  
2 but only  $\frac{1}{2}$  will cut field lines of  
force & the other half will be  
outside

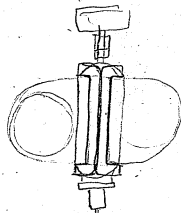
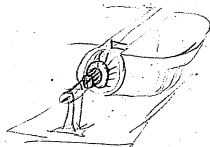
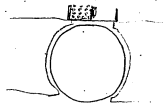
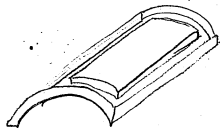


E

H

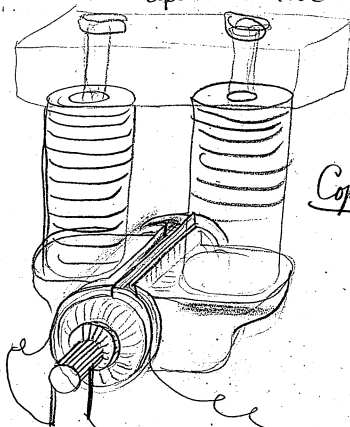
A hand-drawn diagram showing a vertical line with a horizontal line intersecting it. There are some additional lines and markings around the intersection.





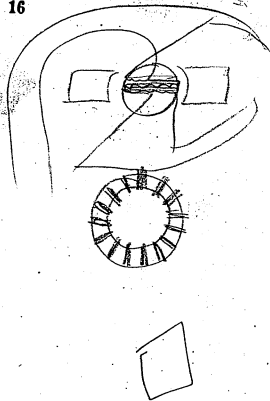


April 8 1886 TAE

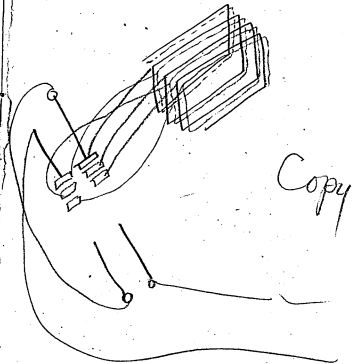


Copy

Extra coil fixed on  
outside of armature  
+ at right angles to coil on  
armature with same current through it  
having same ampere spirals as armature.

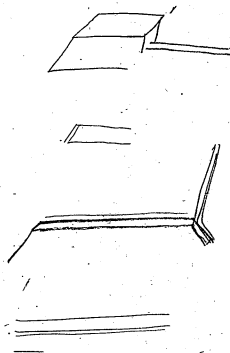
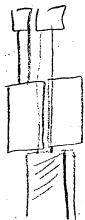


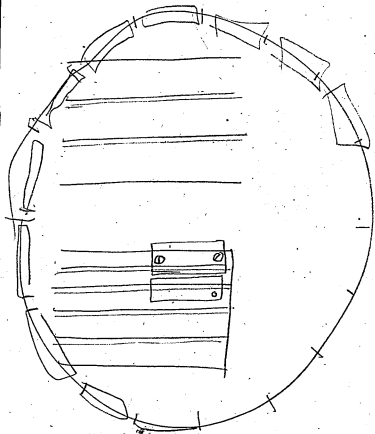
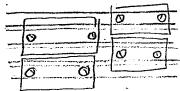
April 8 1886



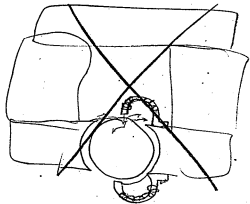
Copy

Two separate and distinct windings  
on one armature each with separate  
commutators 60 volts each - The  
two are connected in series at the  
brushes so the current of one tends to make  
a magnetism in armature the opposite of the other.

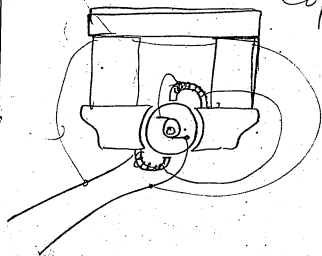




April 8 1886 Tal



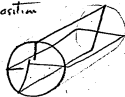
OK



Copy

April 8 1886 T.O.E.27  
Copy this

Wind armature thus one turn around  
 then before going to commutator another  
 turn round but at right angles & so on  
 winding in regular way - Thus  $\frac{1}{2}$   
 the wire ~~is~~ useless but helps to  
 correct the lines of force  
 for the other so the result is same  
 as only  $\frac{1}{2}$  wire coiled on loaded armature  
 anyway owing to position of brushes.



40  
60.

$$\frac{5}{10,000}$$

$$\frac{10}{1,000}$$

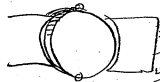
396

60.

1

396.00

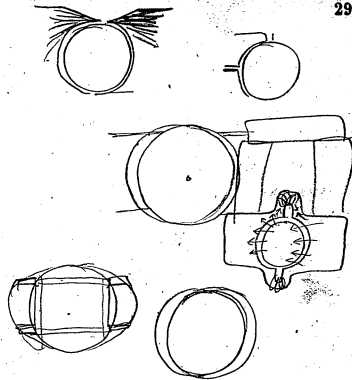
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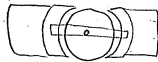


25-

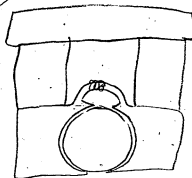
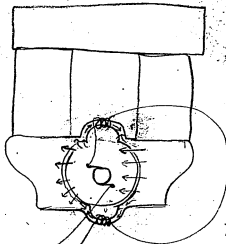
60

1500.

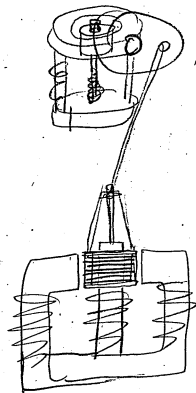
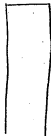


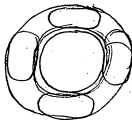
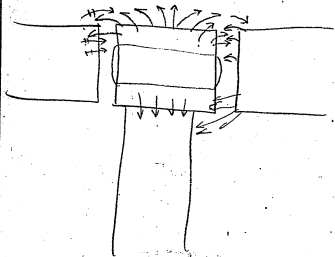


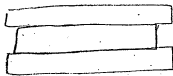
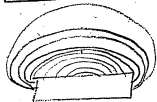
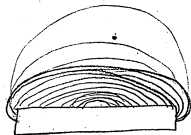
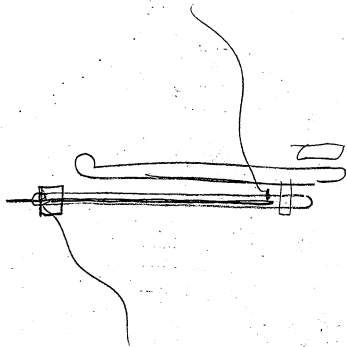
April 8 1886 Tae

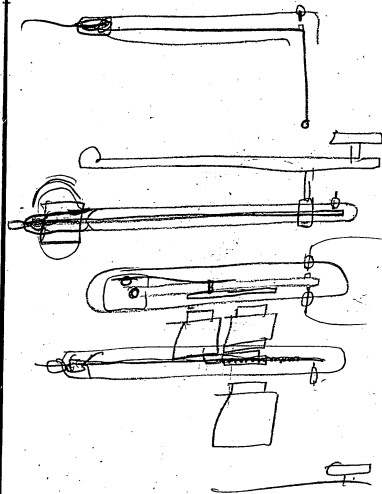
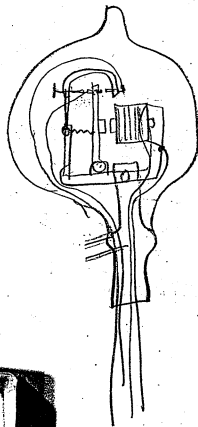


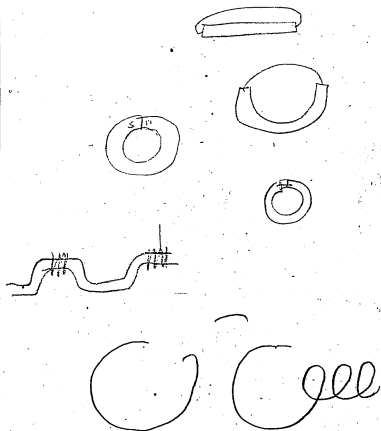
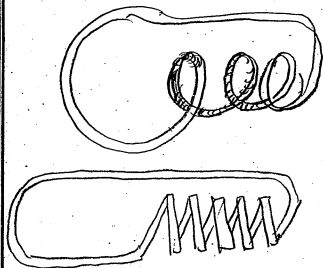


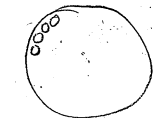












100.

213.

212.

130 -

600 - 213.

730,

212,

108 -

108 -

730,

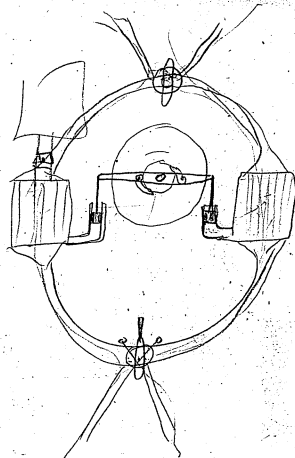
8.38,

120,

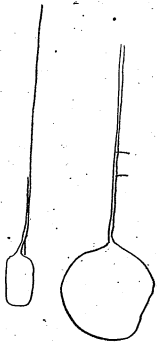


25 150  
12 130  
157 280  
5

730.



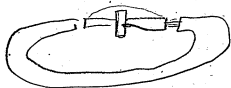
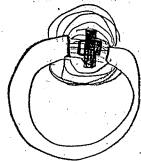
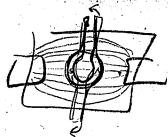
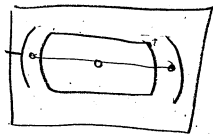
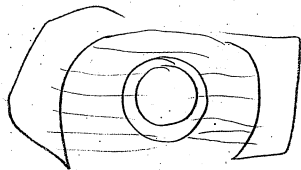
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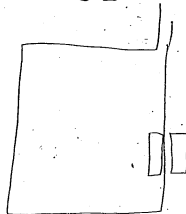
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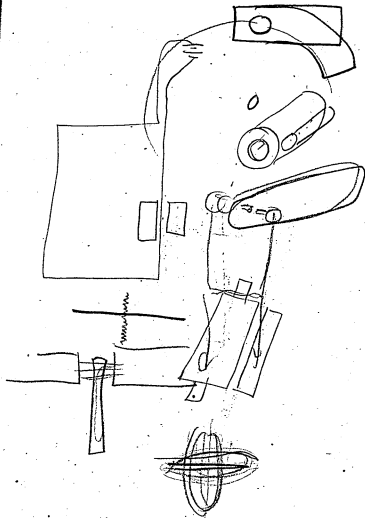
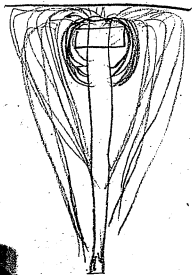
50

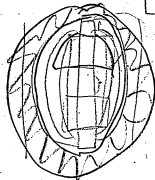
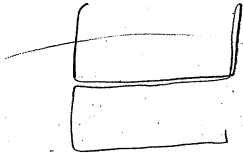
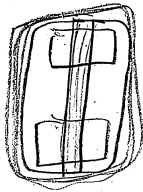


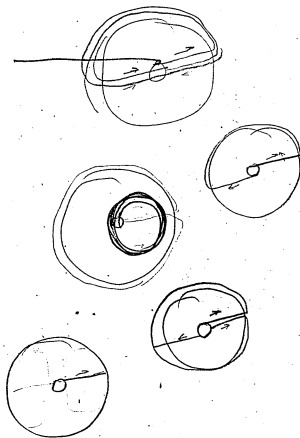
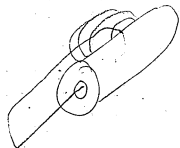


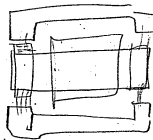
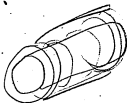
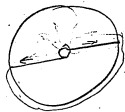


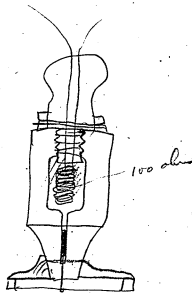


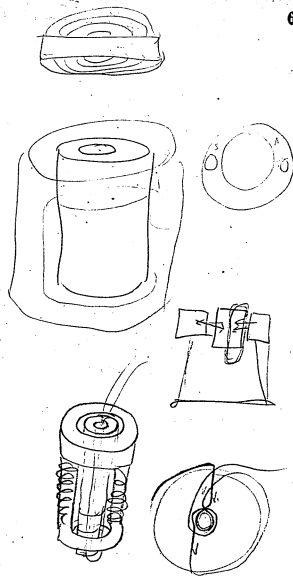
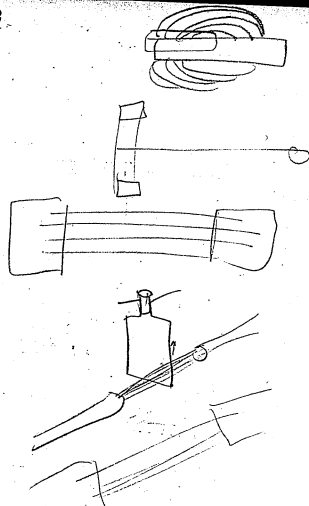


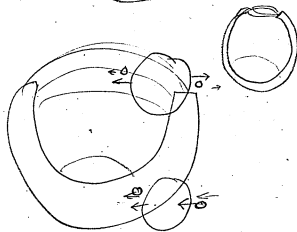
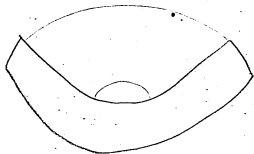
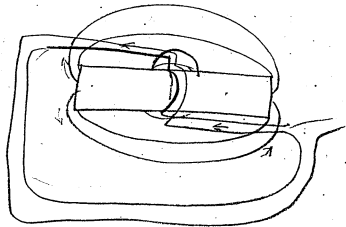
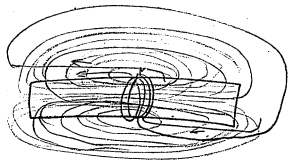




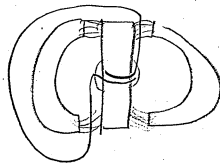
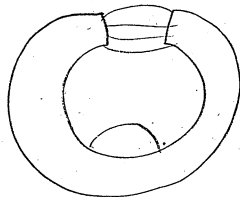
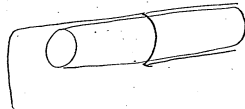


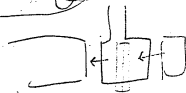
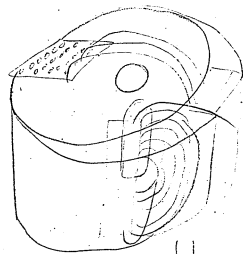
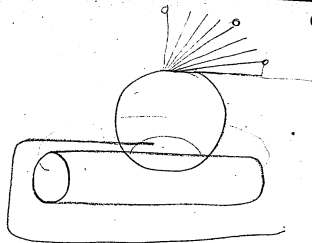


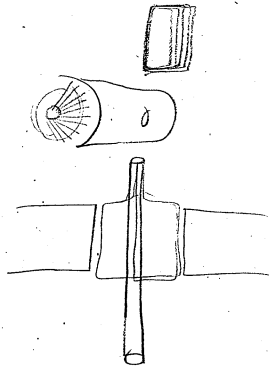


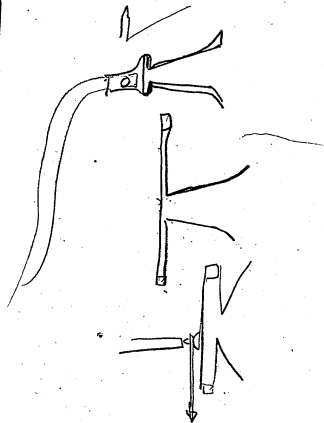
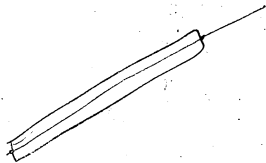


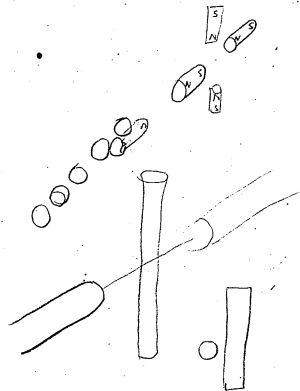
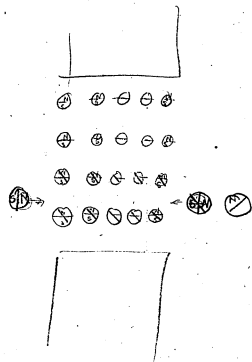


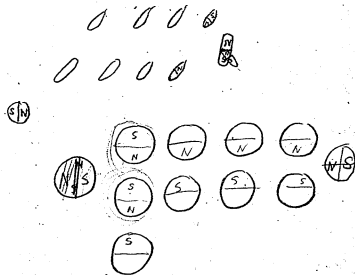
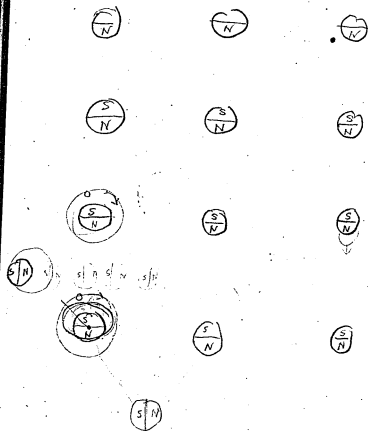


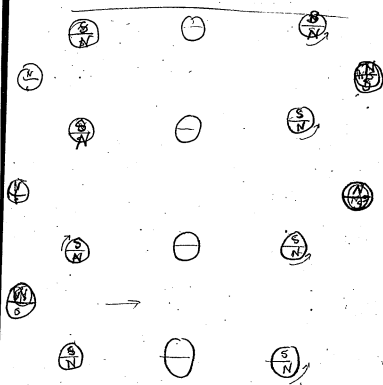
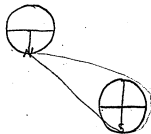


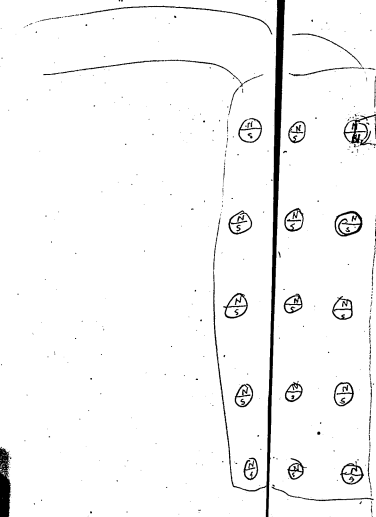




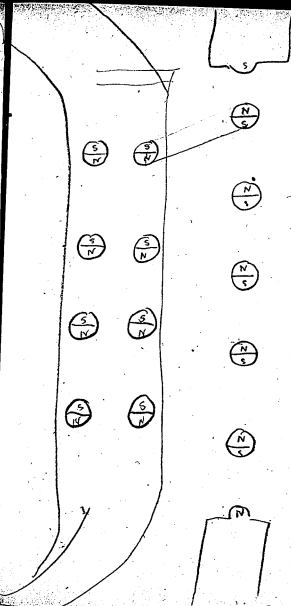




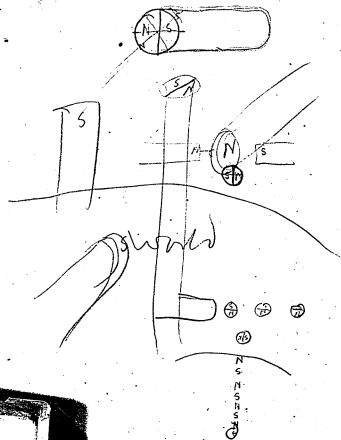




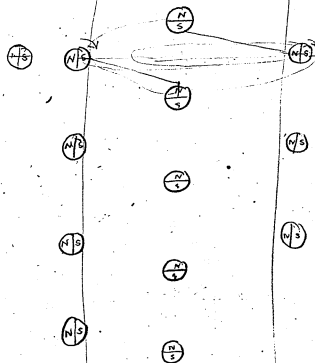


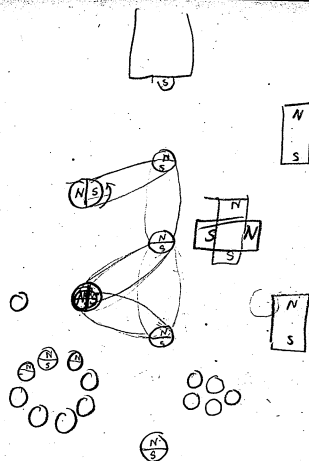
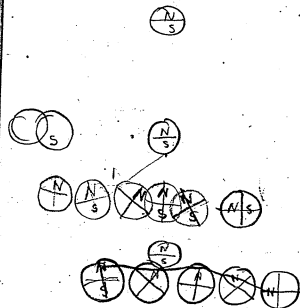


84

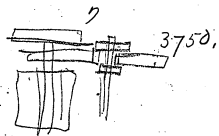
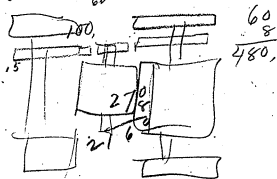


85





$$\begin{array}{r}
 200 \\
 150 \\
 \hline
 1000 \\
 200 \\
 \hline
 3000 \\
 3750 \\
 \hline
 150
 \end{array}$$



$$\begin{array}{r}
 3750 \\
 9 \\
 \hline
 5-10
 \end{array}$$

$$3750 \div \frac{33000}{33750} (9)$$

$$9 \frac{30}{270}$$

4

270,



10

30

30

1200

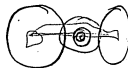
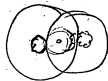
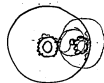
3750

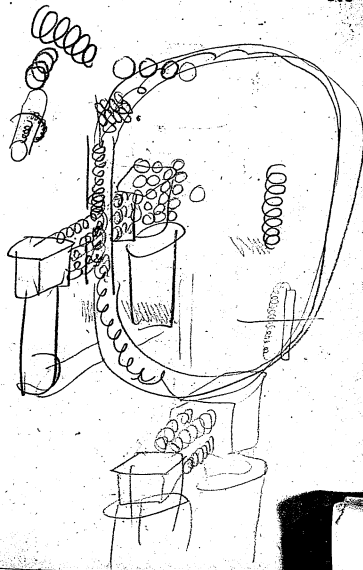
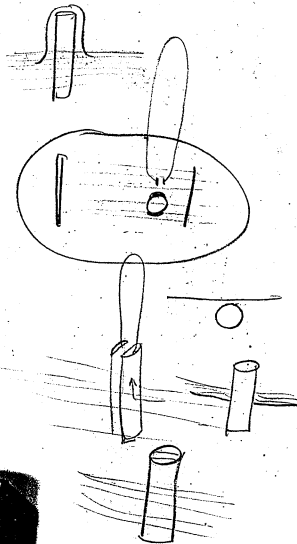
$$\begin{array}{r}
 270 \\
 20 \\
 \hline
 5-400
 \end{array}$$

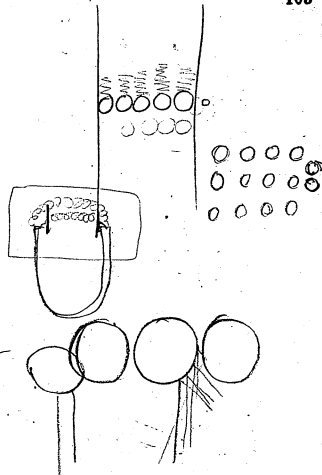
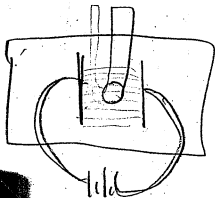
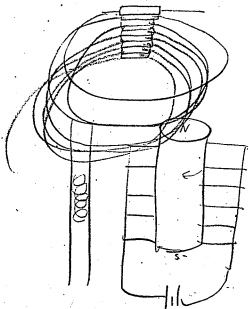
$$12 \overline{) \frac{1500}{30} 45000} (3750$$

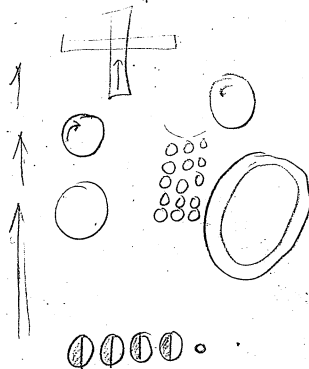
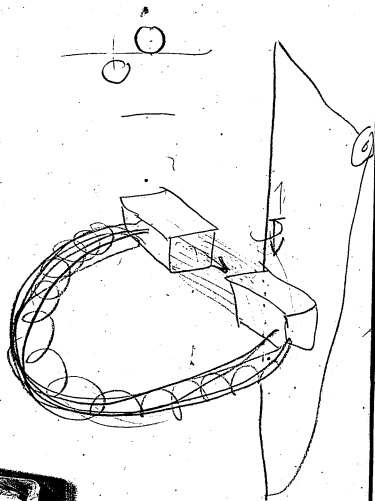
$$\begin{array}{r}
 270 \\
 1350 \\
 \hline
 270 \\
 4050
 \end{array}$$

60

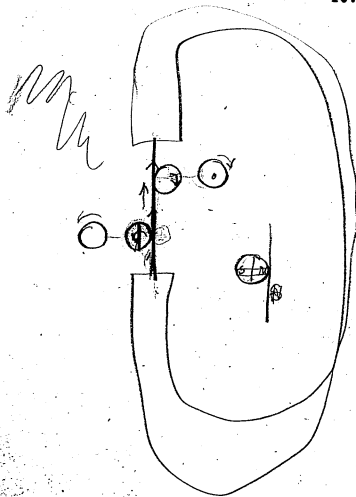
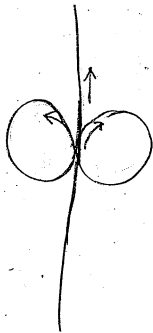


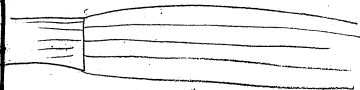
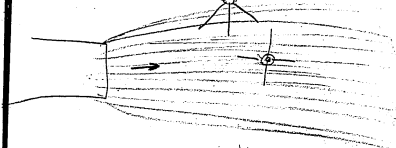
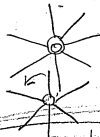
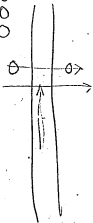
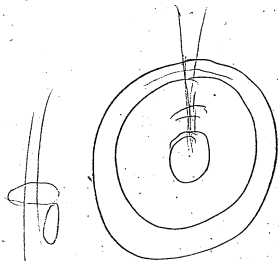


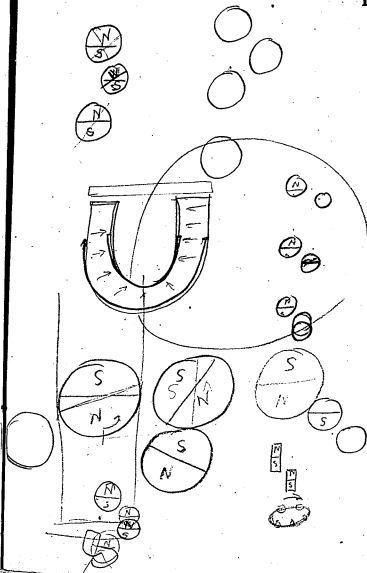
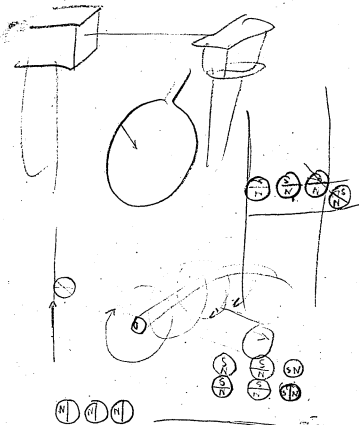


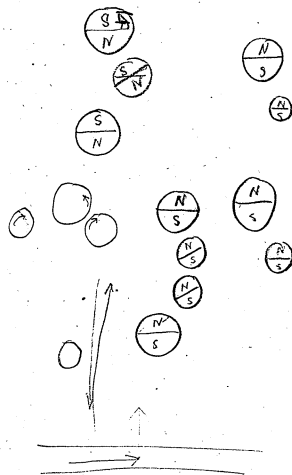
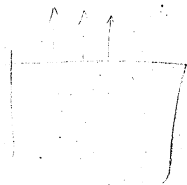
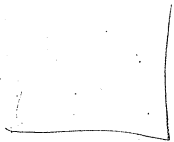


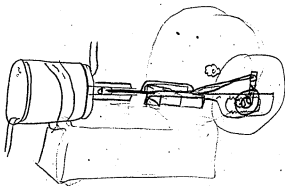
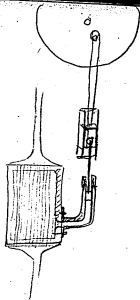












$$\begin{array}{r} 190 \\ 60 \\ \hline 6 \overline{) 1310} \\ \underline{21-4} \end{array}$$

1111 1111

$$\begin{array}{r} 1280 \\ 96 \end{array}$$

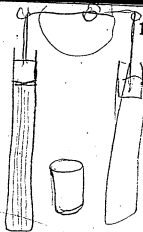
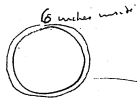
6 dept to inch  
2.664

$$- 30 \overline{) 1406}$$

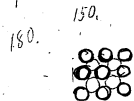
$$\begin{array}{r} 2' 32.68. \\ 112 \\ \hline 180 \\ 32 \\ \hline 212 \end{array}$$

$$\begin{array}{r} 340 \overline{) 960} \quad 2.64 \\ \underline{140} \\ 2240 \\ \underline{2040} \\ 200 \end{array}$$

$$\begin{array}{r} 264 \\ 12 \\ \hline 328 \\ 264 \\ \hline 29.68 \end{array}$$



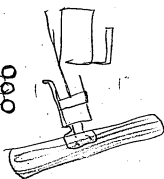
36. 24.  
48. inches - 64.

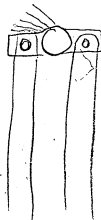
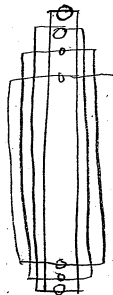
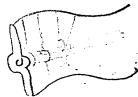
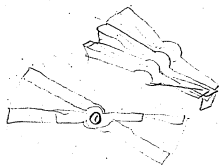


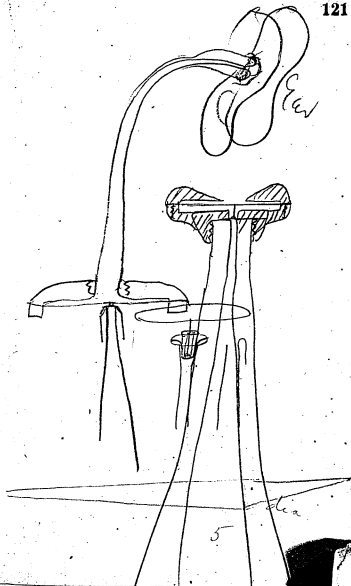
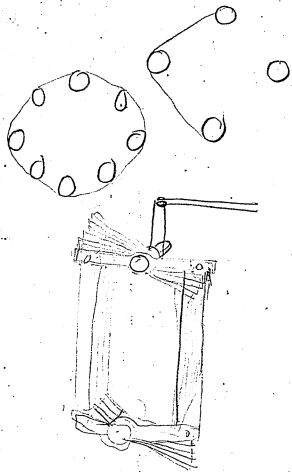
180.



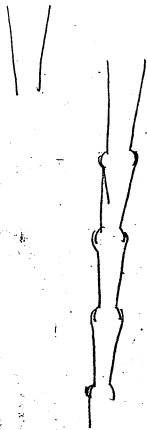
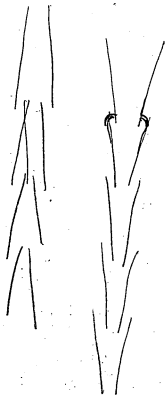
150.

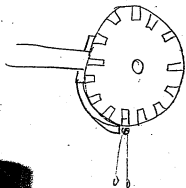
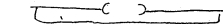




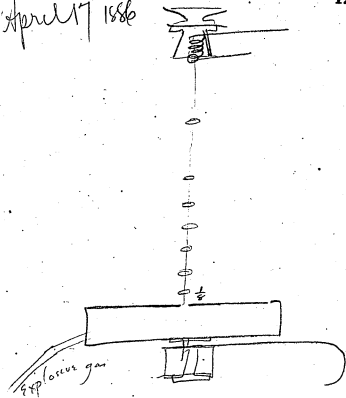




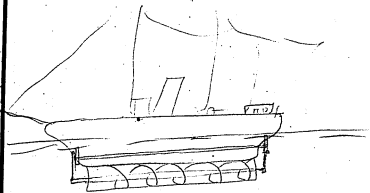




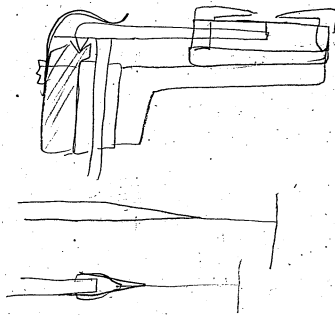
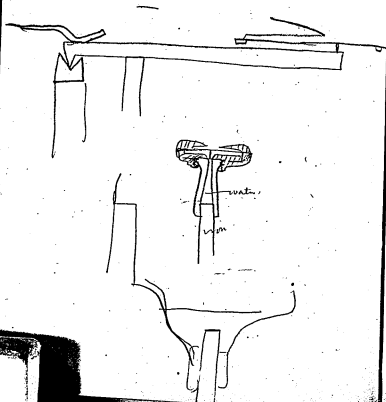
April 17 1886

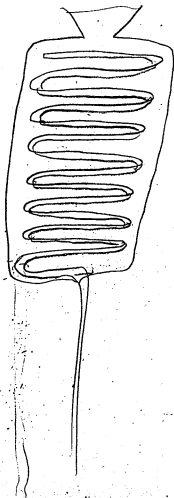
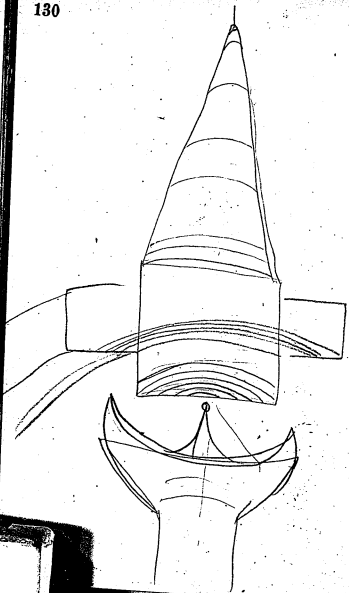


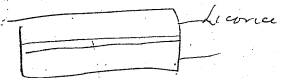
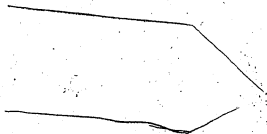
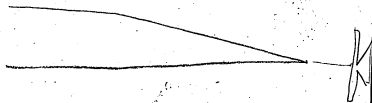
April 16 1886 Cal



Archimedes screw to propel  
Steamer







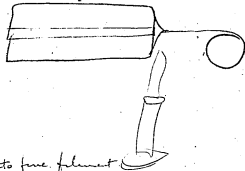
Colloдие

Heat & draw out to silk

April 16 1886 -

Mfr Silk -

Glue mixed with Bichromate Potash in  
proper portion is enclosed in Hydrocarbon



drawn out into fine filament  
then dissolved in a solvent of the  
Hydrocarbon & resultant Bichromate glue  
which is insoluble ~~in~~  
exposed to sun to render insoluble

April 16 - 1886

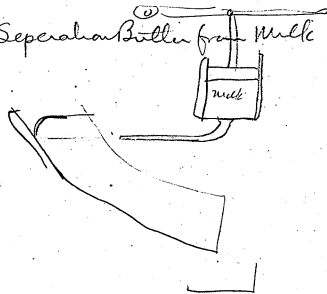
Mf Silk -

Bases - Collodion - Cupric Alum paper  
 Gutta - Rubber dissolved in Benzene or  
 Benzophenone - Rubber - Benzol mixed  
 with as much Rosin & other Hydrocarbons (symp)  
 as it will take & still look translucent together &  
 not be too brittle. — Balata & also  
 with Hydrocarbons, — with Rubber etc  
 Esterin could be glue, Licorice,  
 Malasses Candy — a fabric of  
 various lengths could be made  
 by working Malasses candy ~~with~~ over  
 & over by pulling & using Rubber  
 solution or Balata & Rosin Compound.  
 dissolving off in water.



April 16 1886 ae

Separation Butter from Milk



Milk forced in very fine stream  
at great velocity against an  
exceedingly fine point surface breaking  
globule. This moves down angle  
board slowly while milk  
flows quickly

April 16 1886 Sat

Separation Cream from Milk

Try Graham Dialysis - use  
also Electrically through porous  
diaphragms.

Use porous diaphragms various  
thicknesses + substances +  
use Vacuum underneath

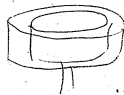
use air pressure on one  
reciprocation to free the  
pores of globules the best reciprocation  
use Vacuum to draw through  
water of milk - the idea  
is to get the water out +  
leave the globules -

April 16 1886 T.A.L.

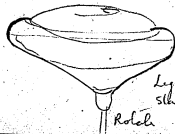
Separation Water from Milk -  
= Evaporate in Vacuum.

Freeze it -

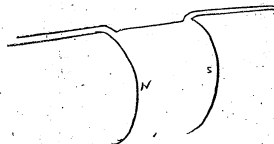
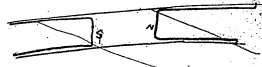
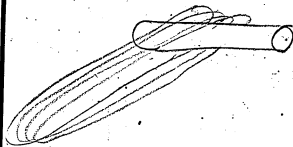
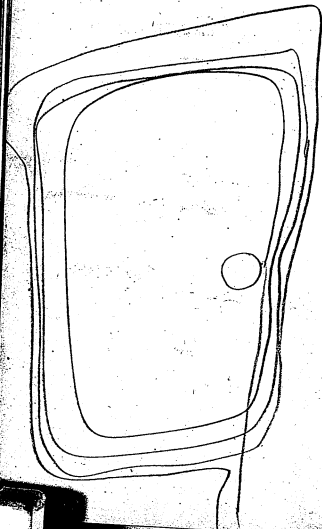
Try filtering it through a tube  
Containing large quantity of  
fine powder. Use Vacuum -  
wash Cream out of powder  
~~or get~~

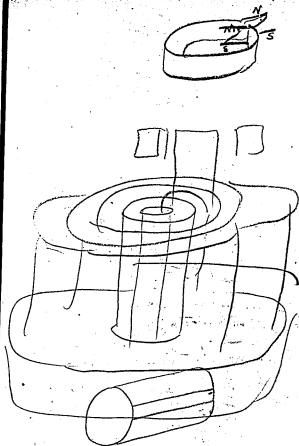
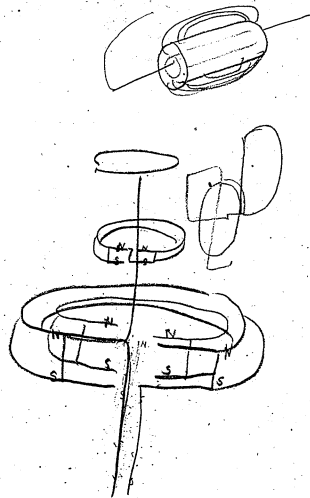


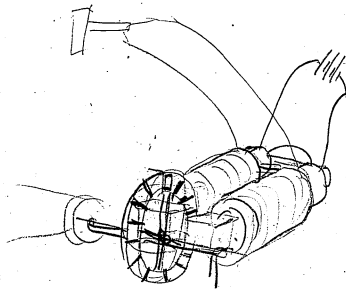
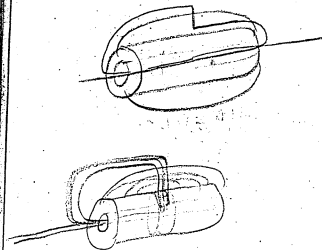
Centrifuge  
through a porous  
substance

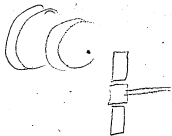
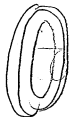
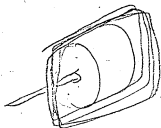
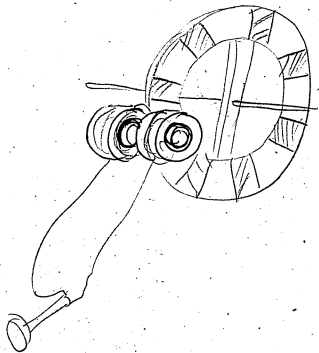


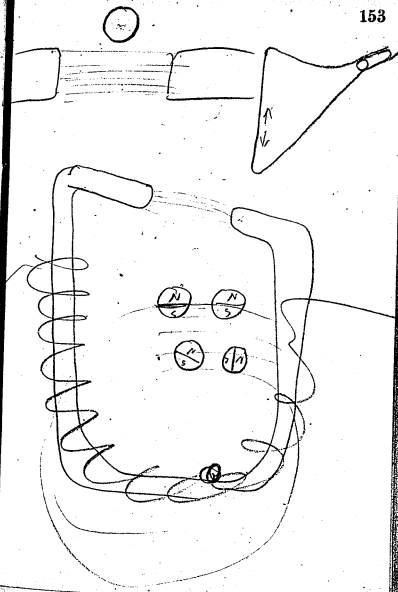
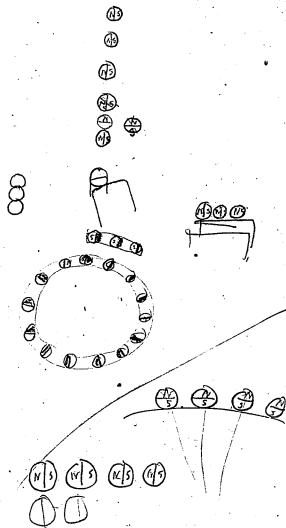
Lighter globules  
slip near center  
Rotch



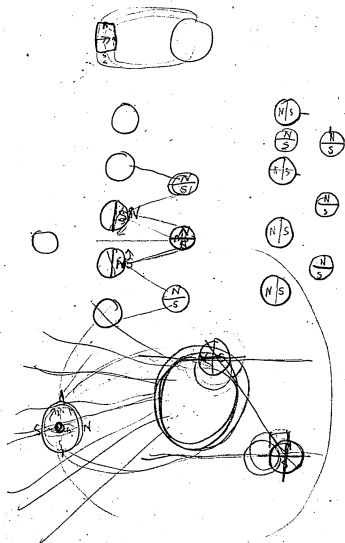
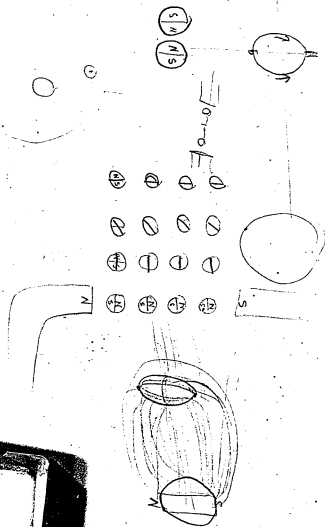


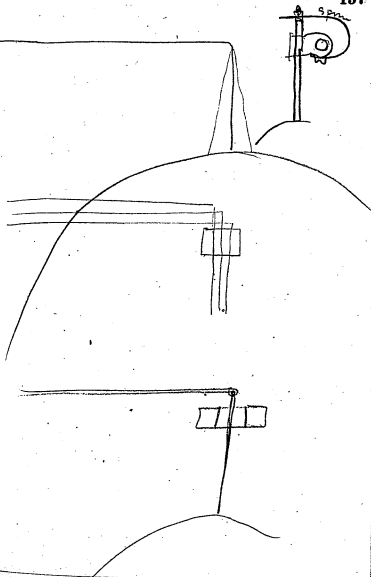
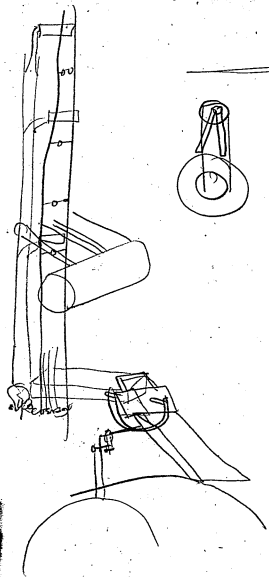




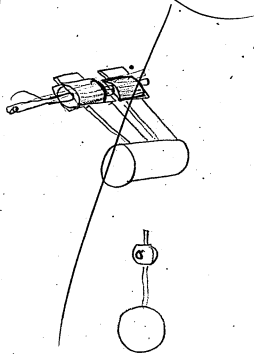


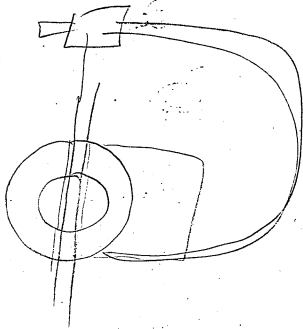




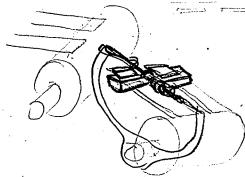
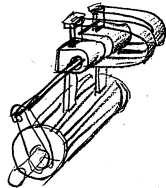


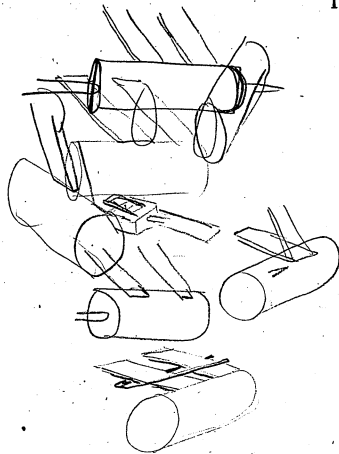
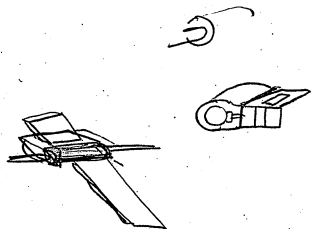
April 17 1886  
Elec RR.

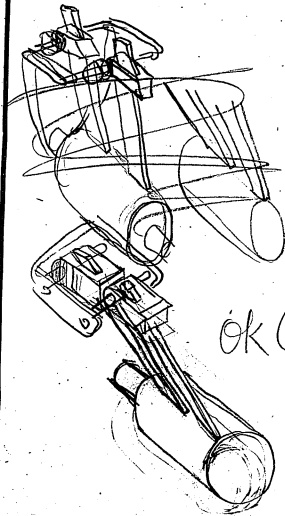




April 17/1886 ERR



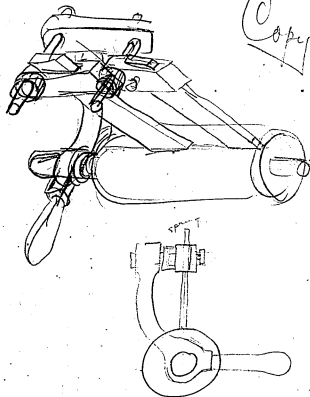


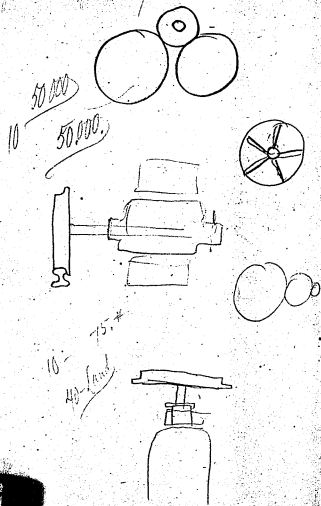


OK Copy

April 16 1869 a.g.  
E.L.R.

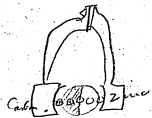
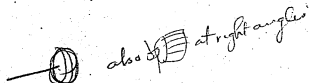
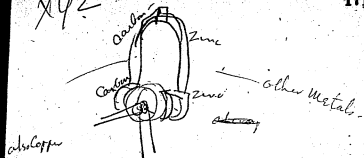
Copy







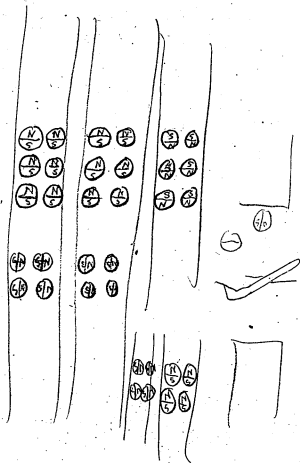
XYZ



potential polarization  
of particles



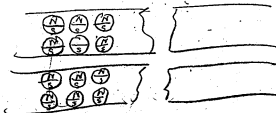
were wound both  
ways

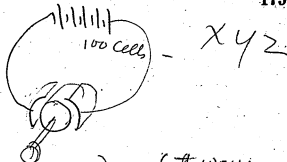
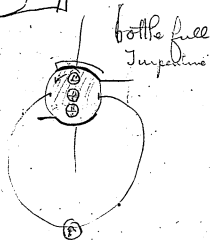
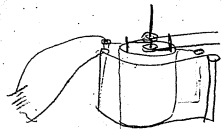


X 42

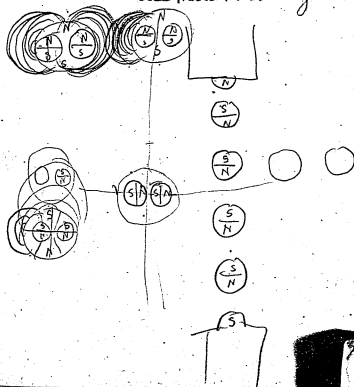
If Electricity passing in a wire  
is given off as heat, Then a wire  
heated and in being conducted shrouded  
under proper conditions for heating  
in E.

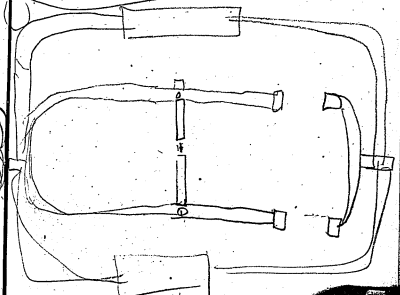
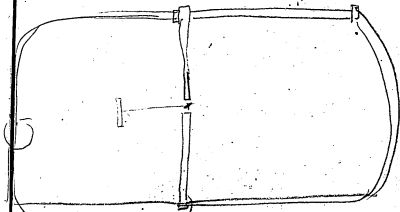
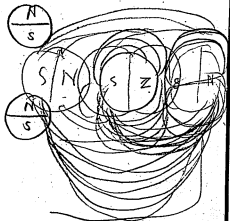
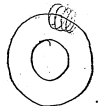
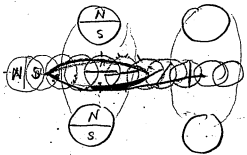
The application of heat to a wire &  
letting it conduct to or  
from a magnetic field  
ought to give E

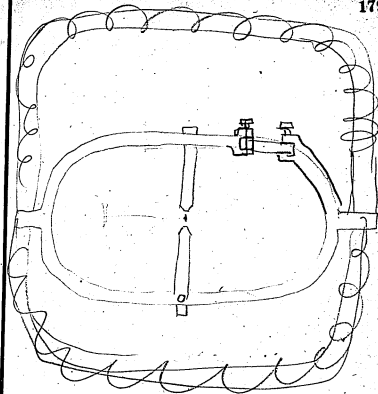
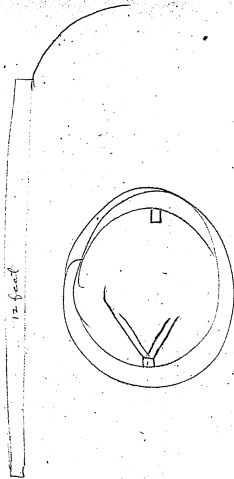


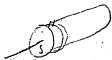
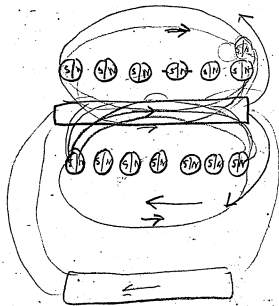


wind wire both ways  
use Hard rubber cylinder







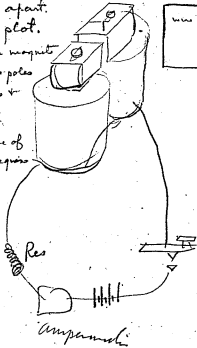


## Fundamental Expt

determine accurately  
the relative EMF with the poles  
at dif distances apart.  
in thousands plot.

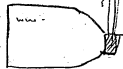
also substitute magnets  
with exactly same poles  
but dif lengths &  
make curve -

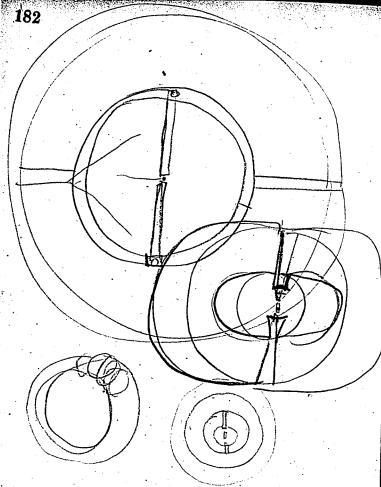
also run curve of  
EMF at dif degrees  
of saturation  
with poles at  
various dists



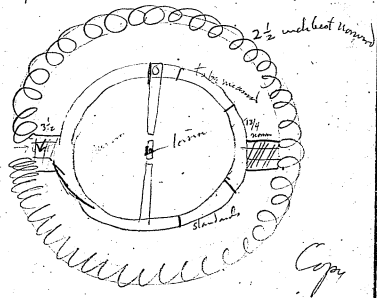
Pendulum should only make a  
single swing

34 inch  
second pole





April 17  
fundamental magnetic Equil



Magnetic Barrels -



Molecular Fe.

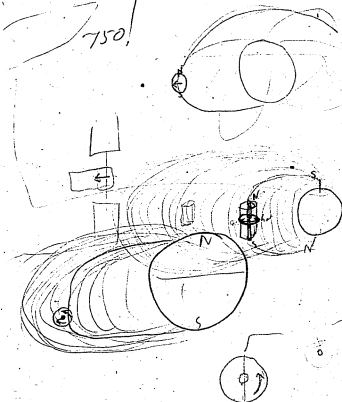
5' min

380

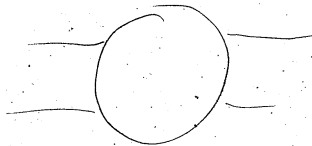
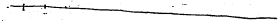
485

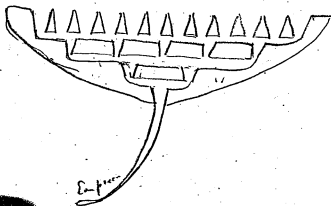
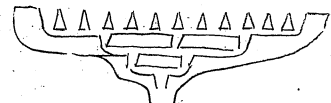
||

750

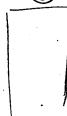


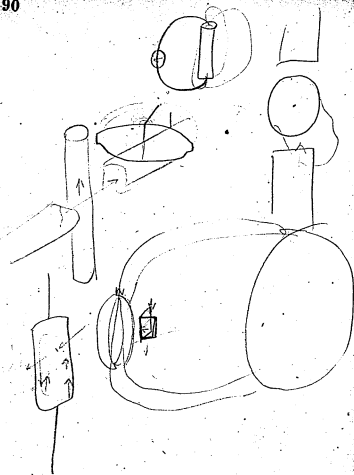






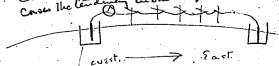
En-fleur





The rotation of the Earth around the sun

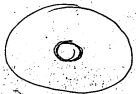
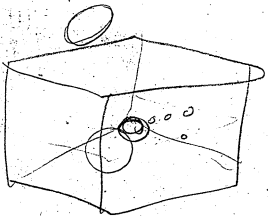
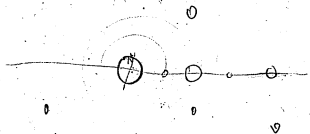
Cut the lines of force emanating from the sun, the rotation of this causes one side of the Equator to be N & the other side P but not. Current. Now the rotation of the earth on its own axis causes the tendency in one half the earth to be neutralized



porous cell filled with Sulphate  
Zinc & amalgamated Zinc  
Electrode.

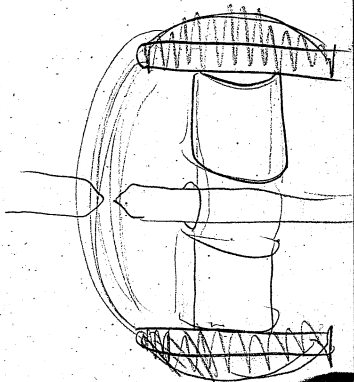
test if there is a current  
from East & west or  
north & south.  
2500 feet apart.

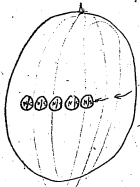
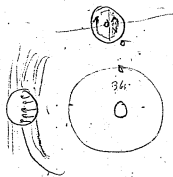
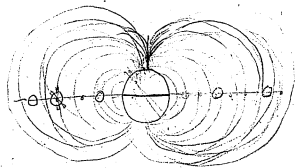
+ increase the other thus a strong current  
Circulates around the Earth East to West.  
This causes a north & south magnetic pole  
The mutual attraction of the whole Equator  
the tendency of the Earth to leave its orbit

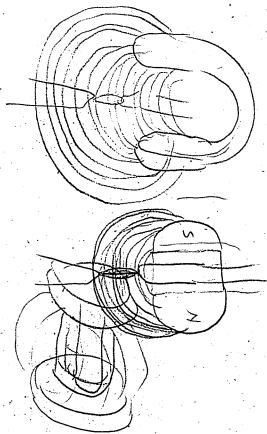


The motion of the Earth due to the  
Seasons has to be explained

The sun must have an orbit. then  
which produces a disturbance or  
displacement of the lines of force



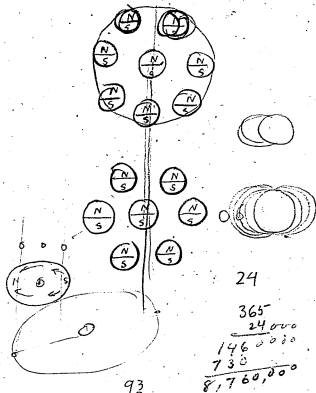
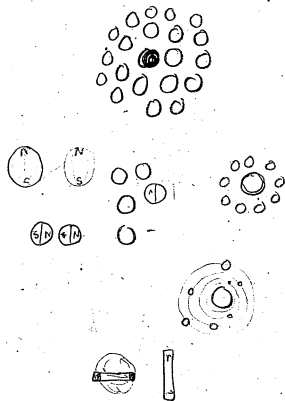




all atoms have a N-S polarity  
 The N of the atom points Equatorially +  
 not towards the South Earth  
 pole - gravitation is on mutual  
 electrical attraction of all the atom  
 The reason of the difference of  
 weight of different substances  
 is that each substance has a  
 different number of atoms  
 or molecular groups. the atoms  
 of each molecule are closer together  
 being greater in number in each  
 molecule in dif substances  
 The molecules may all be the  
 same distance apart, The  
 Total attraction is greater for  
 the Earth as the molecules atoms  
 are greater - all substances

All substances we call  
 Elements are composed of  
 Molecules of different atoms  
 all atoms are primal hence  
 Matter is composed primarily  
 of one substance, the primal  
 molecule, Our solar system  
 is a Cosmical Molecule.

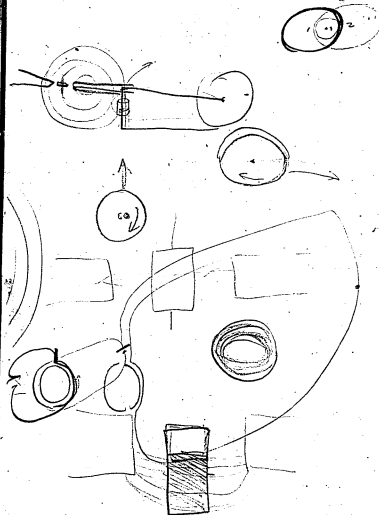
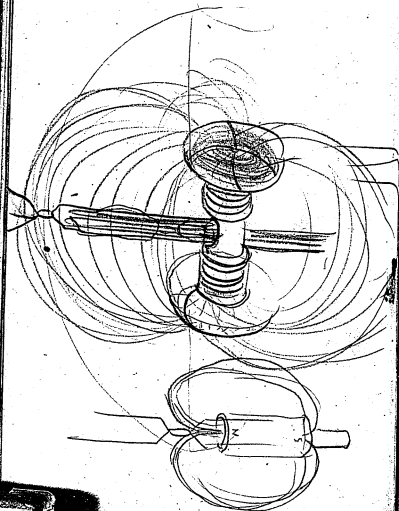
Different Molecules say of Iron  
 are composed of as many atoms  
 as there are lines in the spectrum  
 Each atom has a different motion  
 in the molecule, each atom rotates  
 on its axis with inconceivable  
 velocity

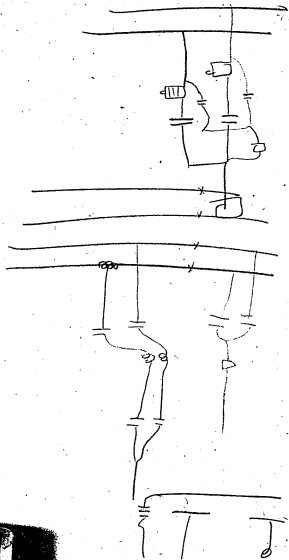


24

$$\begin{array}{r} 365 \\ \times 24000 \\ \hline 1460000 \\ 7300000 \\ \hline 8,760,000 \end{array}$$
$$\begin{array}{r} 93 \\ 186 \\ \hline 558.000 \end{array}$$
$$9 \overline{) 558.62}$$

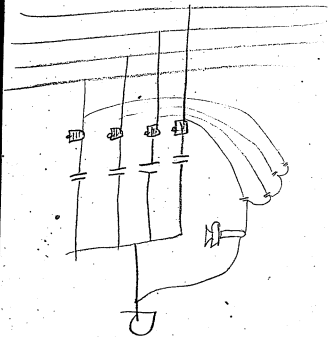






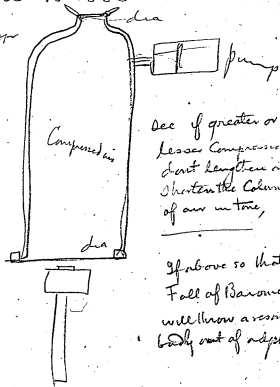
April 18 1886 TAC  
Grasshopper -

To get rid of heavy induction waves



April 18 1886 Taz

Grindstone

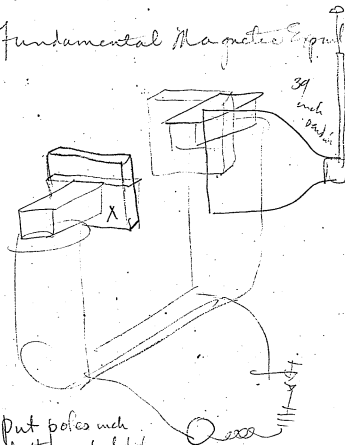


See if greater or  
lesser compression  
don't lengthen or  
shorten the column  
of air in tube,

If above so that  
Fall of Barometer  
will throw a smaller  
body out of nipple

April 18 1886

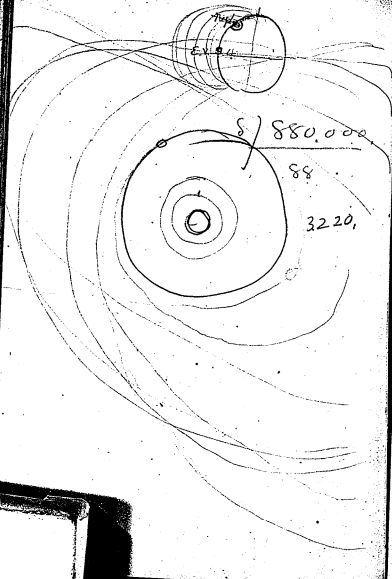
Fundamental Magnetic Expt



Put poles inch  
apart & then make lot of  
piece 'X' through which  
lines from must pass & see

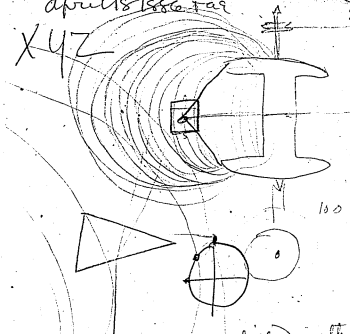
Amperes

if there is any such thing as Specific Magnetic Induction  
Capacity



april 18 1886 T. A. R.

XYZ



pressures tubes filled with  
liquids parallel + at right  
angles through a prismatic  
beam of light

Pass a beam of Violet light  
down a liquid in a tube  
& pass the tube parallel  
right angles to a beam of red  
light also orange etc



10 to sec

40

40

April 18 1886 T. A. E.

*Tetrapanthea* *Eximia*

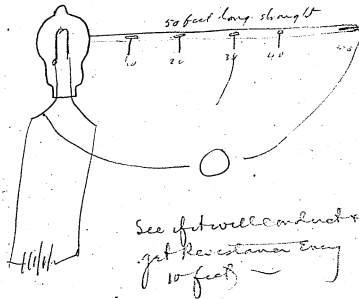


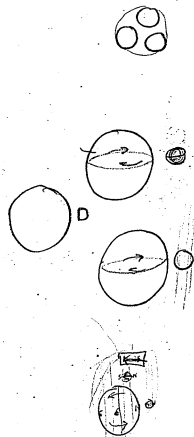
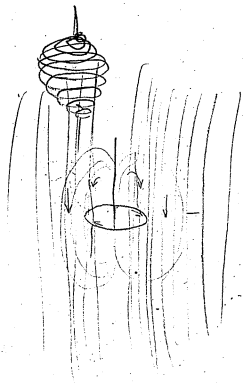
Fracture



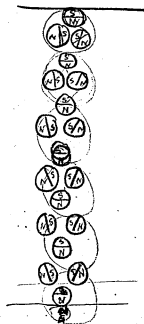


April 18 1886  
Fundamental -









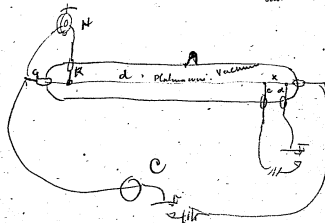
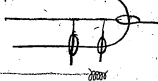
April 16 1886 xar

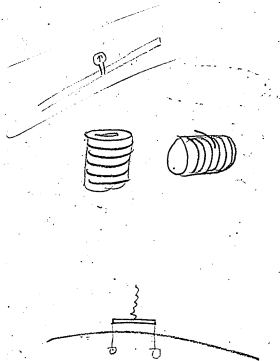
Experiment is to determine if heat conducted along a wire is hastened or retarded by the passage of an Electric Current.

The X part is heated by a battery so X becomes white & the supports red. This is conducted along d - when heat reaches K which is the point of a good

Thermo metal with plat. it sets up a Thermo Current which is detected by the mirror & galvanometer.

Hence C allows weak current to circulate along whole of d in various directions

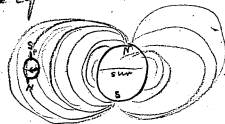




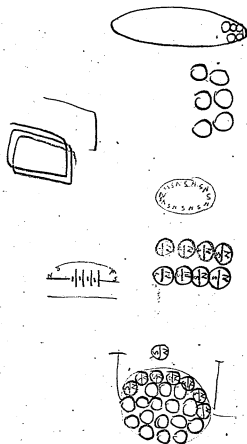
April 18 1886 -

## Fundamental.

Theory that gravitation is circulation of an Electric Current around the entire Earth due to rotation of Earth on axis, cutting the lines of force thrown out into space by the sun which is a magnet whose poles are parallel with the poles of the Earth. The Current circulation ~~for~~ around the Equator, which is its greatest current. ~~is~~ to both poles in lines parallel with the Equator thus

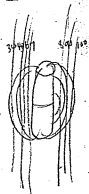
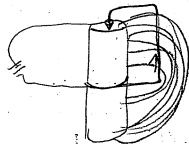


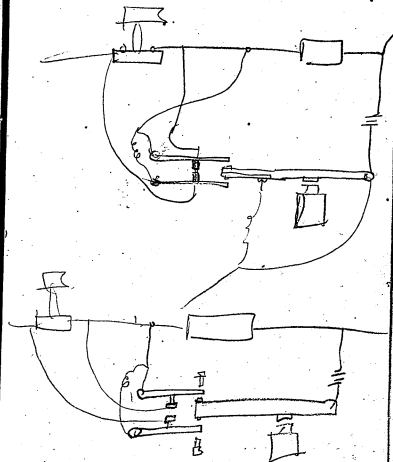
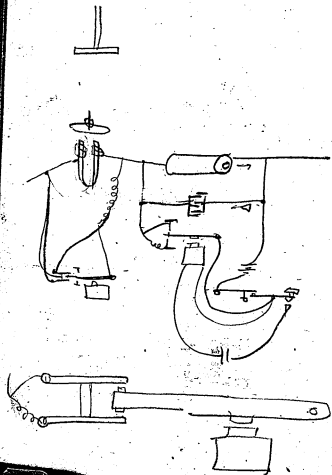
The weight of all matter increases diminishes  
 (10) attraction diminishes until we reach the center of the earth. ~~It~~ excess matter insulated on the surface of the Earth is attracted by static attraction. hence its weight should diminish as we recede from the Earth. a piece of matter which weighs one lb by a spring balance on the sea level



showed weight less 5 miles from the Earth  
in a balloon. Now here is an experiment  
to determine if the attraction due to any  
current passing around the earth  
or on a conductor is perceptibly  
greater when allowed to pass be a part of the  
earth current or insulated therefrom &  
ably subject to static attractions.

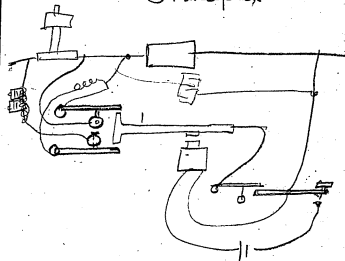




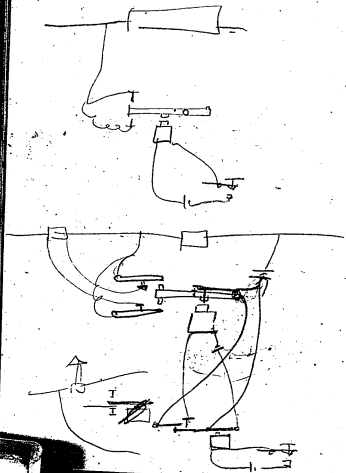


April 21 1886

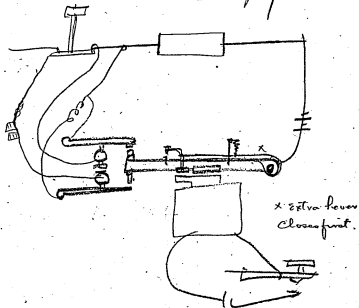
Phonoplex -



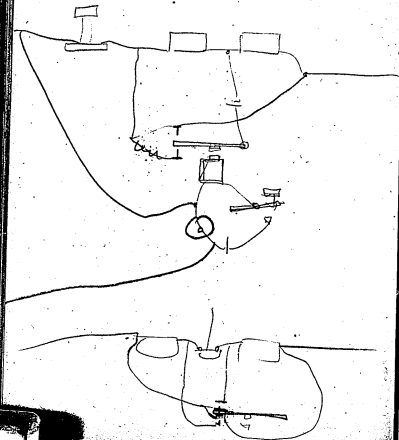
Short city phone partially to weaken  
outgoing signals - + also to  
only use battery while sending  
a dot or dash



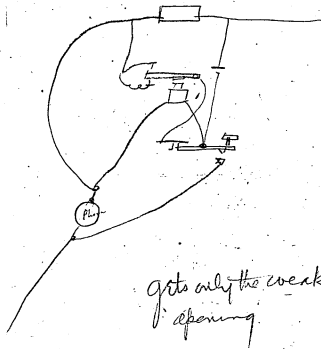
Phonoplex April 21 1886 far  
Copy



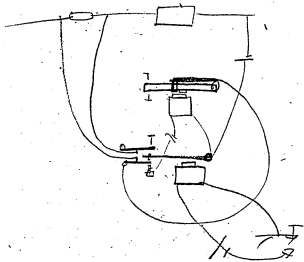




April 21 1886 T.A.L

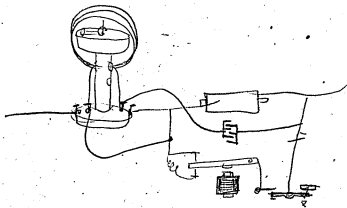
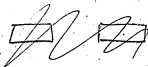


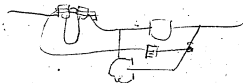
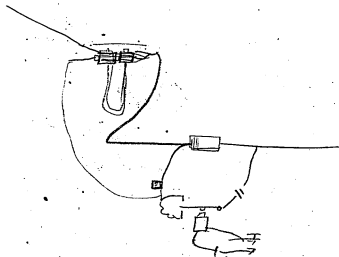
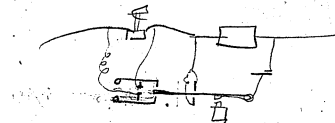
gets only the weak  
opening



April 21 1886

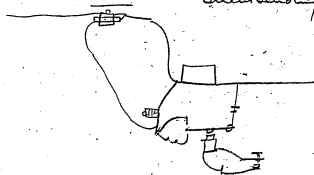
Phonoplex - for



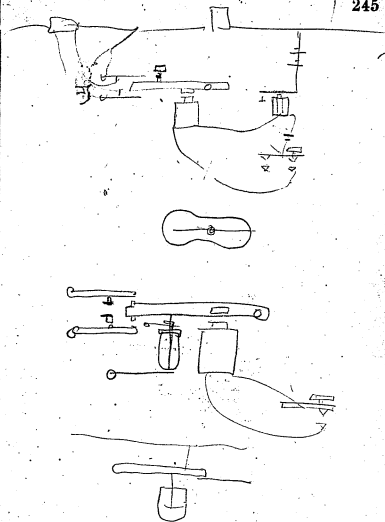
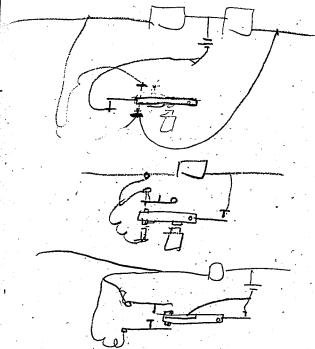


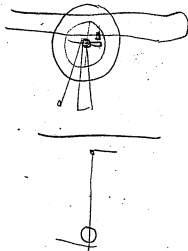
April 21 1886 T.A.S.  
Phonoplex

Silent sending phone

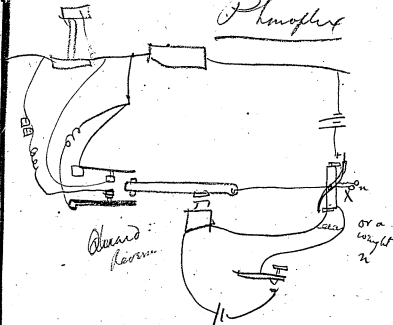


Bug is shorted to phone LF when receiving



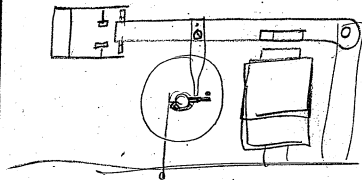
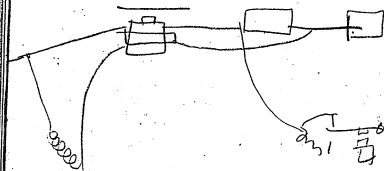


April 21 1886 TAE

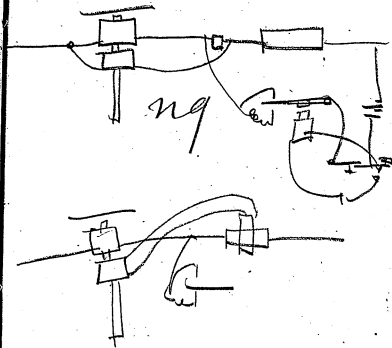
Phonograph

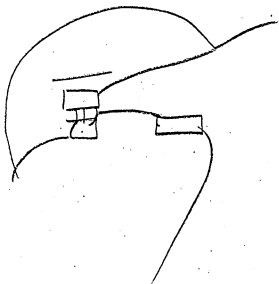
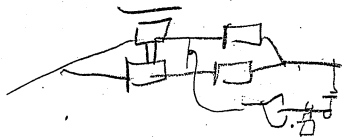
X has thick Copper Core  
over iron Core



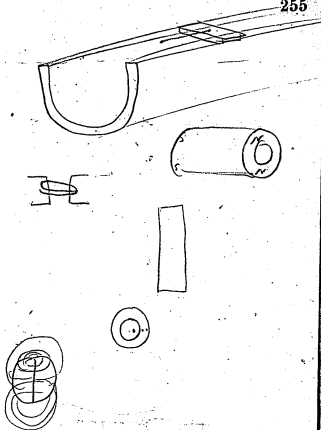
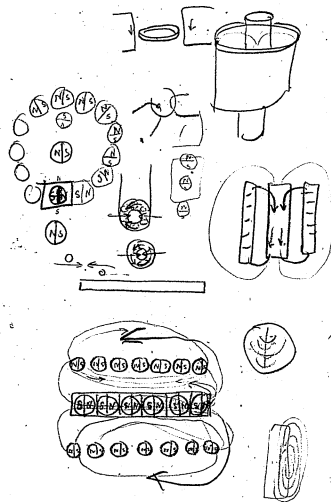


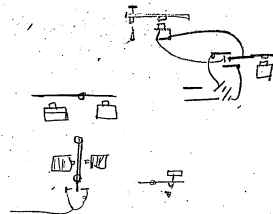
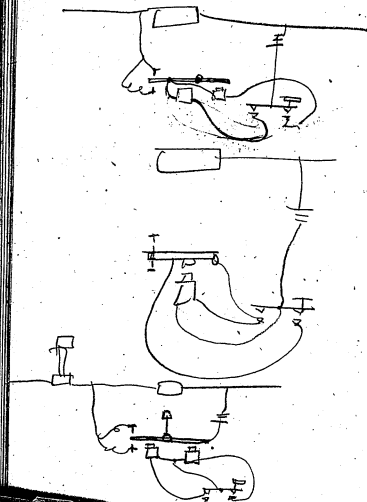
April 21 1886 Tae  
Phonograph

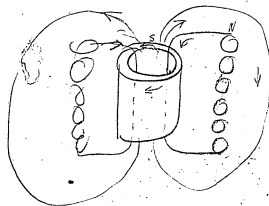
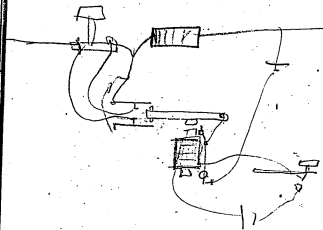
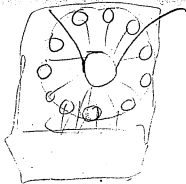








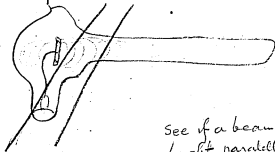




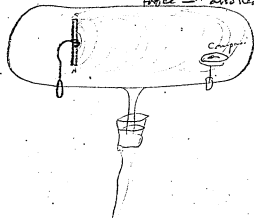
April 22 1886

XYZ

tar



See if a beam of  
light. parallel to right  
angles affords lines of  
force — also heating chamber



The boast of heraldry of pomp and power  
 All that beauty all that wealth ere gave  
 Alike await the inevitable

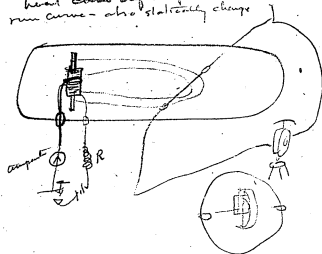
Lorenzo De Medici

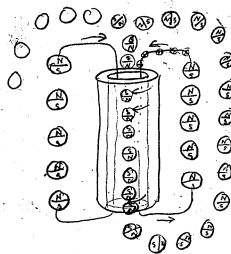
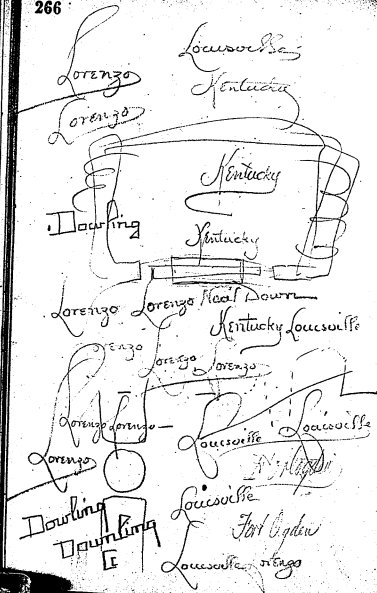
Chicago Milwaukee

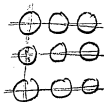
April 22 1886

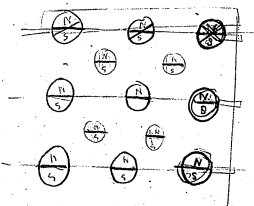
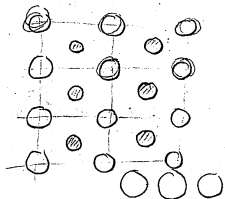
XYZ

Vacuum - run curve of EMF  
 as Expansion proceeds also work  
 beam light both directions  
 heat loss diff temperature  
 run curve - also stationary change



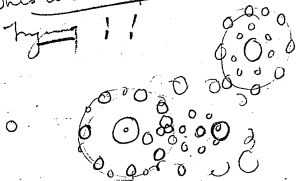




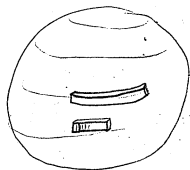


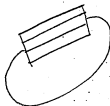
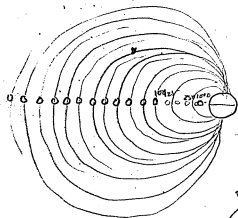
If steel is a compound of Carbon then when cast iron is molten it should decompose with a strong current. (10)  
 a current proportional to its conductivity is greater than a liquid, using <sup>wrought</sup> iron poles the Carbon should go to one pole & pure Iron to other,

This is an Experiment worth trying !!







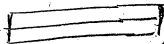


$$\begin{array}{r} 210 \\ 62 \\ 31 \\ 11 \\ \hline 4 \overline{) 858} \\ 84 \\ \hline \end{array}$$

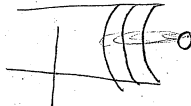


15 31 62 260  
↓ ↓ ↓ ↓

1000  
250  
162  
15



150



Fort Myers Notebook, N-86-08-17

This notebook covers the periods April 1886 and May 1887. There are also a few undated entries in between. All of the entries are by Edison. Many of them deal with the rotation of the earth and other planets around the sun and the resulting lines of magnetic force and electricity, which, Edison theorized, were responsible for gravity. There are also numerous entries relating to spectroscopy and to fundamental experiments on magnetic fields. Other notes and drawings concern the grasshopper telegraph, electric meters, arc lights, electric power distribution, pressure indicators, armature design, telephones, and the direct conversion of heat into electricity. Included also are notes about experiments to be performed at the new laboratory in Edison's lamp factory (see Lamp Factory Notebooks). One unlabeled set of drawings may pertain to ore separation. The first page contains the notation: "Fort Myers Florida Aug 17 1886 Ideas T A Edison." The book contains 288 numbered pages.

Blank pages not filmed: 128-129, 136-137, 142-143, 286-287.

Missing page numbers: 95-96, 103-122.

N-86-08-17

Fort Myers Florida

Aug 17 1886

Leas

J A Edison



April 18 1886 TAE

The rotation of the earth around the sun (which is an immense magnet or spherical mass with polarity one  $\frac{1}{2}$  N other half S Throwing out lines of force through space) cuts these lines of force so one side of the earth is N the other S but this does not produce a current but the rotation of the earth on its axis causes the circulation of a tremendous current around the earth in direction and parallel with the Equator clear up to the two poles which it creates, The mutual attraction of the lines of force of the Earth with its poles and the lines of force of the sun is at the present distance of the Earth from the sun just sufficient to

balance the tendency of the earth to go in a straight line, hence its orbit. - The lines of force emanating from the sun are electric as produced by the counter lines of force from bodies outside of our planetary system, hence the earth to always be in an exact balance between its tendency to proceed in a straight line & the attraction of the sun, must move in this electric orbit.

The rotation of the earth or rather oscillation of the earth to produce the seasons must be due to the fact that the sun oscillates.

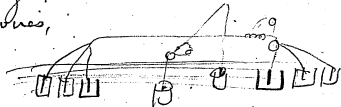
In the same manner:-

Expt

To ascertain the strength of Electric  
polarization of matter on the earth  
subject to conduction in current  
form. Take two wires each <sup>500 feet</sup> ~~1~~  
mile long one east & west the  
other north and South. No 0000.

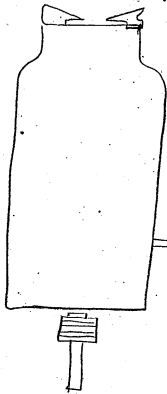
Sink <sup>several</sup> a large porous pot at  
each end in good damp earth  
fill with solution of Sulphate  
zinc & use amalgamated electrode  
zinc for ground plate -

Measure daily morning noon &  
night. Current & Volts on both  
wires,



April 18 1886 TAE

grasshopper



ascertain if by  
 Compression of air  
 the Column of air  
 which is in tune  
 with a certain  
 note can be increased  
 Compression responds  
 to higher note (as  
 you compress the column  
 may be shorter  
 air pump

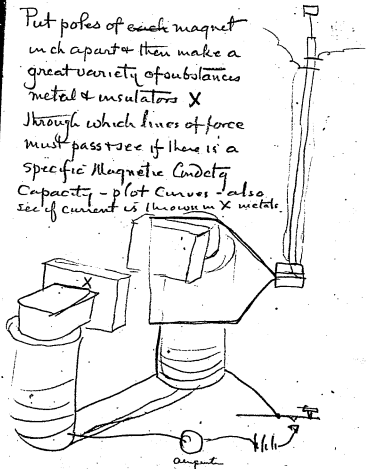
If above correct  
 Changes in Barometer  
 throws Resonators  
 out of order -  
 ditto velocity of sound  
 in air -



April 18 1886 Var

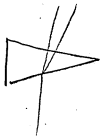
# Fundamental Magnetic Experiment

Put poles of each magnet  
in ch apart & then make a  
great variety of substances  
metal & insulators X  
through which lines of force  
must pass & see if there is a  
specific Magnetic Conductg  
Capacity - plot Curves - also  
see if current is thrown in X metals



April 18 1886

XYZ



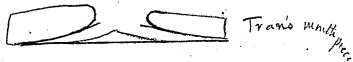
Spectrum - pass tubes filled with liquids also wires - parallel & at right angles to the beam of light. pass a beam of one kind of light through a tube lengthwise & move this parallel & at right angles to another beam of different colored light & also the spectrum & also white light - try these expts also in magnetic field both directions -

April 18 1886 TAE

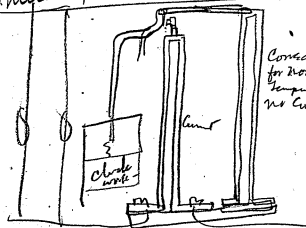
Make a jump spark spectrum also  
flame spectrum of iron nickel  
and other metals & then

The same in a powerful field  
parallel & at right angles to  
the L of F also in a partial  
vac tube & this between poles  
in various directions of a  
powerful magnet, also use  
static from holz to change it in  
vacuum,

April 18 1886 *702*



Meter by Electric Heat Expansion

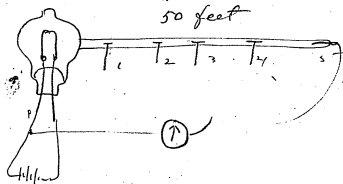


Correction  
for Normal  
Temperature  
No Current

also put secondary coil  
around X & see if  
beam light - through alum  
glass electric wave in  
Mercur gas - also heat

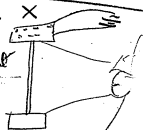


April 18 1886 TAE



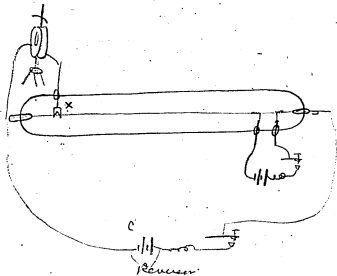
See if it will conduct in  
straight line & get Res  
every 10 feet —

Disc glass  
Coated in Vacuum with  
mm & bits  
was melted & fused  
Vie broken - see effects  
imagined - light  
through



April 18

Expt



Experiment to determine if heat conducted along a wire is hastened and retarded by electric currents to & fro. part of the wire is kept incandescent until by conduction heat reaches the thermo metal X when mirror Gal detects it. Conduction time is ascertained with C off. Then with current P & then N from C also vary strength.

April 18 1886 -

Fundamental -

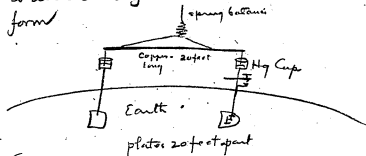
Theory that gravitation is due to the circulation of an electric current around the earth due to the rotation of the earth on its axis cutting the lines of force thrown out into space by the sun which is a magnet whose polar center line is parallel with that of our earth - The current circulates around the earth parallel with the equatorial belt clear to both poles  
 (c) like the lines of latitude

The weight of all matter diminishes  
 (c) electric attraction diminishes until we reach the center of the earth - matter insulated from the conducting crust of the earth is attracted by so called static attraction, hence the weight of such matter should diminish as we recede from the earth a pound of glass weighed by a spring balance

Make a filament about same as regular lamp but straight & 10 inches long  $\frac{1}{2}$  dia - Wind fine wire around outside primary + secondary - then heat fil with current, bal <sup>side of</sup> bridge the wire & use another tube same amount of wire on same size tube so as to get same self induction - Now when from white bal - then gradually lower temp by res in circuit & take throw of gal coils time - after ~~the~~ put from one side Nickel other & get Curves -

out the sea level should weigh less on the same balance in a balloon 5 miles high.

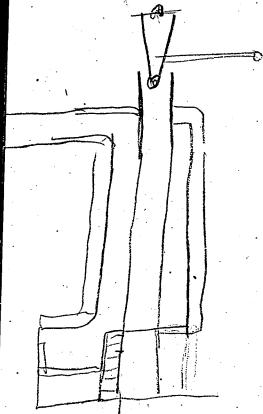
Here is an experiment to determine if matter where the E has a current form is attracted greater than in static form



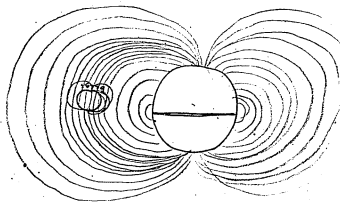
Test in New Lab -  
 Consider availability of Cobalt.  
 Nickel & Iron for heat effect  
 Magnetism



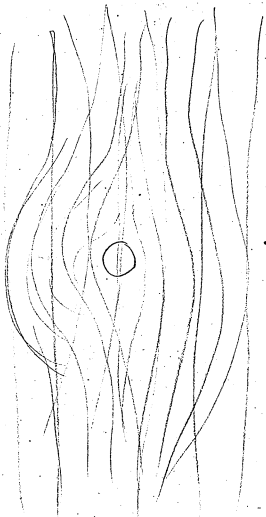




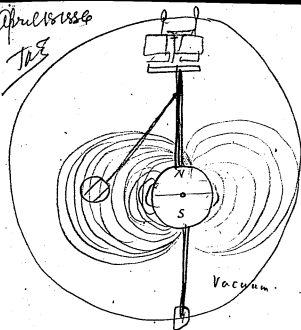
April 18 1886



The reason why the earth rotates on its axis while going around the sun is because the lines of force cutting the earth on its face nearest the sun are the strongest gradually weakening as you go farther out from the sun. The weakening of the line in 8000 miles is sufficient to produce rotation by mutual attraction between the strongest earth lines and the strongest sun lines. —



Apr 1888  
TAE

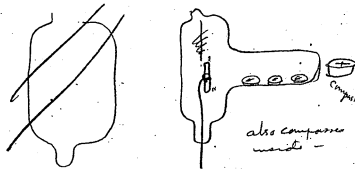


apparatus to prove the  
theory

April 21 1888 -

Perhaps our solar system is rotating  
as a whole and the sun rotating cuts  
its own LF & thus the heat is accounted  
for -

Find a needle

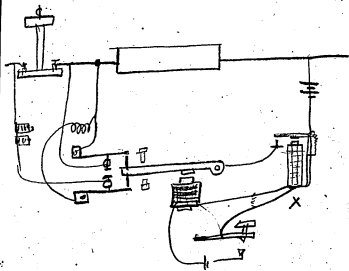


ascertain the strength of deflection in a  
Compass needle 12 inches away from  
a small  $\frac{1}{2}$  size helipen pen may then  
proceed to exhaust air & see if lines of  
force spread out in vacuo watching for  
deflection of needle as exhaustion proceeds

April 21 1886 TAE

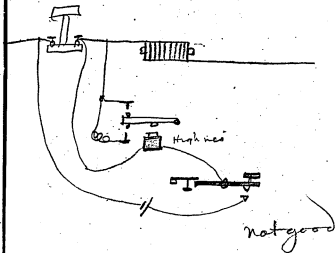
Phonoplex

To Silence phone when sending +  
also save battery



X has Copper core around iron core.  
Copper  $\frac{1}{16}$  thick act very slight

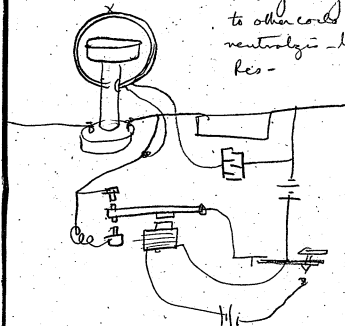
April 21 1886 TAE



April 21 1886

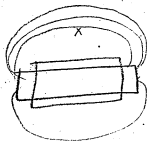
Phenoplas

X Right angles  
to other coils +  
neutralize - low  
res -



April 21 1886

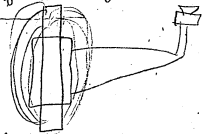
Fundamental,



How are L&F conducted, can it be that  
 the actual iron molecule goes round via  
 X put in path of lines of force  
 a gas flame to oxidize it and a  
 wet sheet of Ferri also ferrid potassium  
 also look through Spectroscope  
 at Bunsen burner through which  
 L&F pass see if get iron spectrum

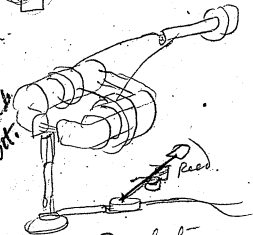
April 21 1886 -  
X42

Vibrate a flame in path of L.O. force  
see if it affects it & gives sound - telephone



also galvanometer

Dec 10 87  
Ordinary magnet  
& galvanometer



Reed vibrating  
diaphragm gives  
vibrations to charcoal  
which gas passes through flame in front of L.O. force



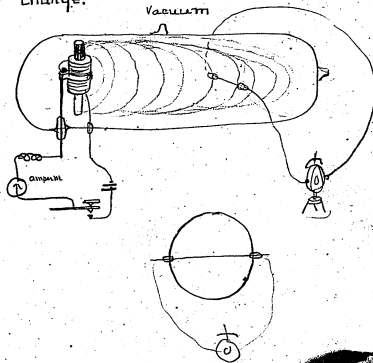
April 21 1886 -

## Fundamental.

As Iron gives a jerk when heated  
by Elec at about red heat and  
expands, contracts & also loses its  
magnetism or power to become  
magnetic about same point. I  
think reverses direction of current  
in thermos at about same point  
(ascertain). And other metals  
don't, this shows that its  
molecules or atoms are closer  
together than other metals,  
& therefore and have to be separated  
by heat before they become like  
the other. Conduction not subject  
to magnetism, hence a slight  
electric current in iron makes  
powerful attraction & scarcely more  
in other metals. Perhaps  
certain metals if cooled down  
to 75 or 100 below zero & put in  
a powerful coil would shed  
magnetism.

Use rotating disk  
& solid carbons used &  
ether.

Vacuum - Run curve of E.M.F. as  
exhaustion proceeds - also work  
beam of light both directions - heat  
tube and run curve, also statically  
change.



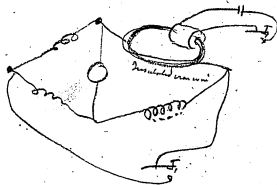
April 22 1886 -

It is probable that an electric current cannot get the atoms of non magnetic metals completely rotated so N & S are exactly opposite each other. They rotate with difficulty while the iron atoms rotate easily and when a piece of iron is

saturated the atoms are all opposite in polarity (e) (s) (s) (e) in copper even <sup>by current heat</sup> to the melting point they are only partially rotated

(s) (s) The effect of heat must be to rotate the atoms in the opposite direction as at red heat magnetism is lost, while electric conduction which can only take place by rotation is diminished by heat,

Independent now the question is  
does iron become a better conductor  
of  $E$  if magnetised. Try

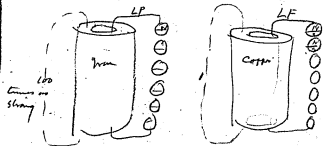


measure it magnetised + demagnetised -

If not there as iron outside of  
its magnetism property acts to a  
electric current like another metal.  
then iron must be have a  
Compound atomic arrangement  
one system of atoms rotating  
easily gives us magnetism while  
the regular atomic system

\* may prove myself by this - I can't say  
 Causes it to act like another  
 metal to E.

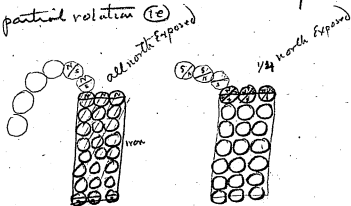
I must carefully investigate all  
 the phenomena connected with  
 the sudden jerk in red hot iron  
 noticed by Barnett. see if it does  
 it without current but by heat alone  
 without Electricity.



It may be iron has no  
 magnetic polarization in air  
 hence it has no magnetic  
 force.

Hence the air seems conductive of force  
 from iron several hundred times better  
 than the same line of force from Copper etc

This would seem to show that there was either a surface polarization of the Copper or the End atoms on Iron were rotated. Exactly north & south with a given ~~same~~ current while with other metals there was only partial rotation (10)



If rotation of Copper atom was  $\frac{1}{100}$  part of that of iron atom with given current. The polar pull or attraction at the Ends of Copper would be only  $\frac{1}{100}$  part of that of iron ~~when~~ because, the total surface of active atom surface would only

$\frac{1}{100}$  - Now very probably  
is fully rotated when saturated.

If conduction is rapid oscillation of  
atoms (from the great earth pole line  
or internal attraction due to earth  
cutting lines of force from the sun)  
Then the amplitude is due to the  
amperes, and rapidly to the number.  
hence a one ampere cell will give  
a current which will give a certain  
amplitude of axial rotation say 100 M  
in second, 2 cells added together &  
still same current & twice resistance  
will give ~~same~~ <sup>same</sup> amplitude  
but twice the number (i.e. 200 M  
in the whole length)  
or what is probably more correct  
keep up the same amplitude in the  
first ohm. The increased pressure  
preventing a fall of amplitude  
in the first ohm by the addition  
of the second ohm.

April 22 1886 TAE

57.

If steel is a definite combination of carbon and iron, then when cast iron is molten, it should decompose with a strong current say 1000 amperes per 3 square inch section.



good!



April 22 1886 TAE

Determine by the 39 inch pendulum  
experiment apparatus if the saturation  
curve in amperes is the same when  
the poles are far apart or close together

40-50

30

64

95-30000-25

4.

4

100

20

1

100

**Supplemental**

	Distance from Sun in A. U.	Period in days	Eccentricity	Inclination of orbit.	Diameter in miles
Sun					888,000
Mercury	.3871	87.	.2056	7° 6'	3089
Venus	.7233	224	.0068	3° 24'	7896
Earth	1.000	365	.0168		7896
Mars	1.5257	686	.0933	1° 51'	4070
Jupiter	5.2028	4332	.0482	1° 19'	92,164
Saturn	9.5398	10759	.0560	2° 29'	75,070
Uranus	19.1824	30686	.0466	0° 46'	36,216
Neptune	30.0363	60126	.0087	1° 47'	33,610

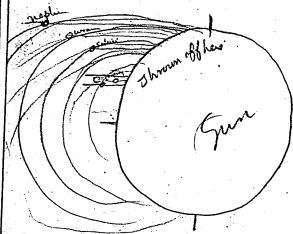
'Dra Moon 2153

Inclination orbit  $5^{\circ} 9'$  ?

Distance in radii from Earth 59.9644

Sideral period  $27^d 7^h$

Synodie Revolution 29. 12h



Saturn	3 times slower	bulky larger
Mercury	1.26 slower	21 "
Mars	4.46 slower	18 "
Uranus	5.46 slower	
Neptune		

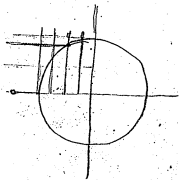
Saturn 99 times weaker lines of F  
 90.56 larger in bulk  
 9.5 greater dia  
 9.5 " distance around orbit  
 29.4 larger going round this orbit  
 or 3 times slower than the earth's per year

Mercury

Lines of F 4 times stronger  
~~4~~ 4 times nearer  
 4 times less length of orbit  
 4.1 less time going around orbit  
 2.5 less diameter  
 6.54 less bulk

Mars Lines of F 2.25 weaker

1.52 the distance  
 1.94 " diameter  
 1.62 longer orbit  
 1.58 times longer going around  
 3.7 the bulk



## Uranus

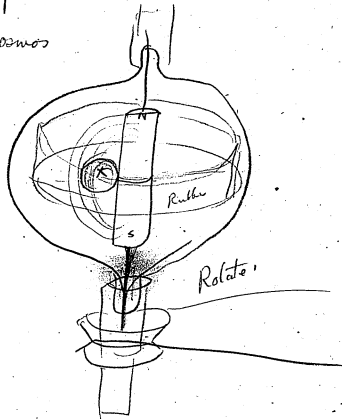
Lines of Force 360 times weaker  
 84 times slower making the orbit  
 19 " greater length of orbit  
 or 4.46 slower per mile  
 21.036 times greater bulk  
 4.54 times the diameter

## Neptune L.F. 909 times weaker.

18.11 times the bulk  
 30 times the length of orbit  
 5.46 times longer going a mile  
 4.25 times the diameter

April 25 1886 TAE -

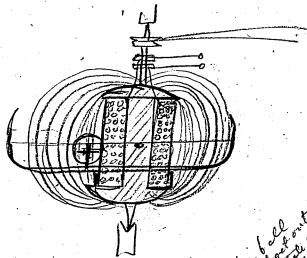
Cosmos



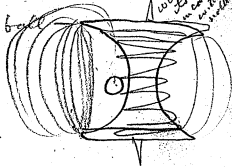
X Copper Ball.

April 25 - 1886 TAC

Cosmos



X Copper ball

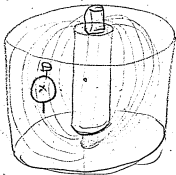


This ball  
can't get out  
will rotate on  
its axis in  
contact  
with  
nothing

April 25 1886

tag

Cosmos.

Try variety Expts  
with this

Copper just balanced in  
Kerosene magnet.  
rotated see if rotation on  
its axis. — also rotate  
the jar & hold magnet still,

April 25 1886 TAE.

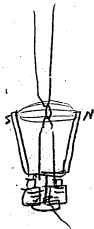
Make a lot of hollow balls  $\frac{1}{2}$  inch  
dia of Iron lead Tin Zinc  
+ other metals, balanced exactly  
by themselves in Benzine also  
water with salt in - Then

Throw in an Iron ball + several  
Copper see if they arrange themselves  
definitely - also cut water  
with line of force, pass  
Current through with variety  
balls in liquids - see if  
any definition comes of  
it,



April 25 1886 -

Newdodge  
arc lights



Rotate the arc  
+ keep it in  
center stops  
flicking -

Good work at ap

Notes for Lamp Expts — June 18 1887  
Tas

Ammonium Nitrite present in the breath, in large quantities after eating especially —  
J Chem Soc Vol 25 - p 35

Rain water 2 milgm per litre Nitric acid  
+ ammonium Nitrite

Absolu Coconut charcoal See J Chem Soc  
March 1870 - also Vol 25 - p  
649 latter gives table of absolu  
Cynique + NH<sub>3</sub> at diff temps pres  
4 60 min

Nitrous oxide decomp by Copper  
Spiral also iron —

Silver Reduced from Oxide by

Hydrogen in Lamp obsabmancy

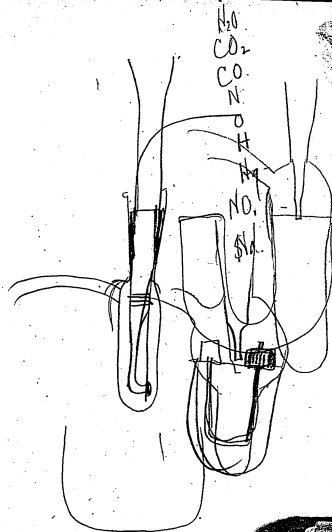
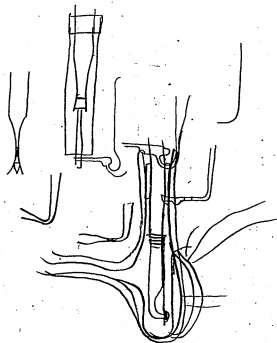
Try Potassium amalgam -

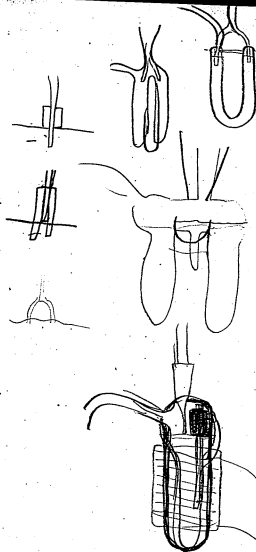
Try Lead Reduced by H<sub>2</sub>, for absabm  
O hot -

Alcohol cleans glass  
splendid -

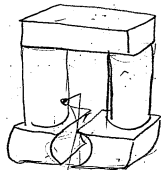
other cleaners Bisulphide Carbon  
Cyanide potassium, Benzene,  
Nitric acid - alkali hot,  
Heat - This leaves porous  
residue charcoal & salts,  
hence better use alcohol remove  
it, first hot water, then alcohol.

---





175 -

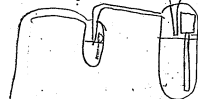
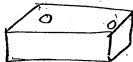
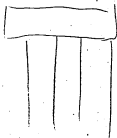
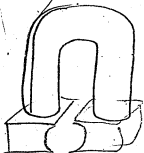


$$\begin{array}{r} 4000 \\ 161,000 \end{array}$$

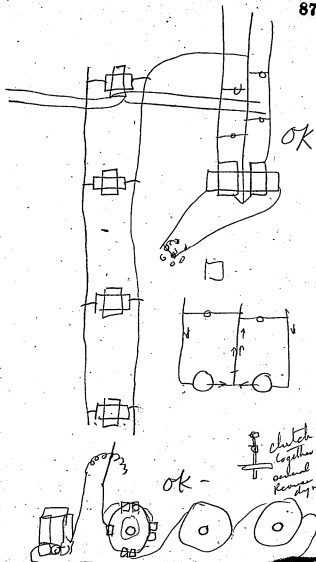
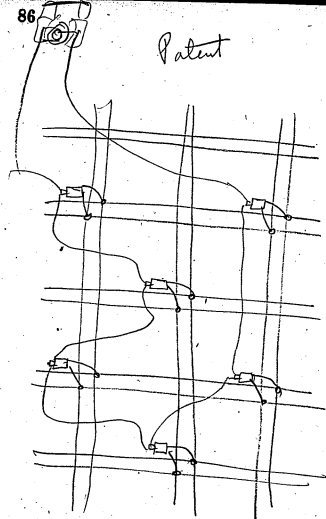
3

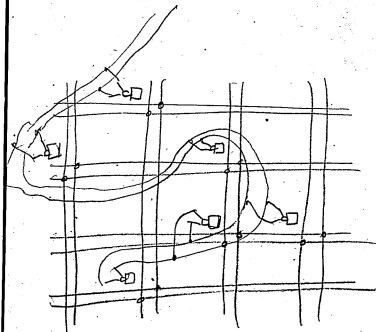
3.7/8 -

2 1/4 -



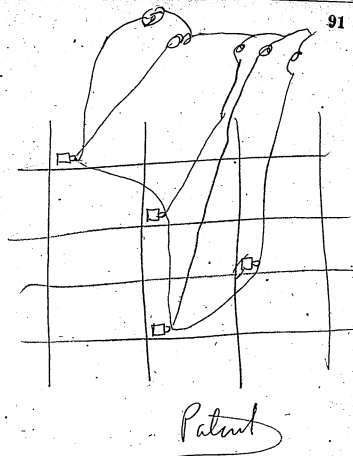
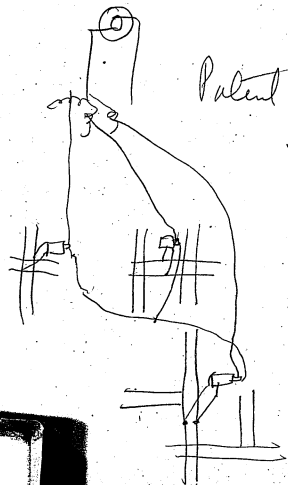
Patent

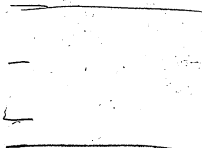
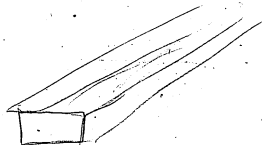


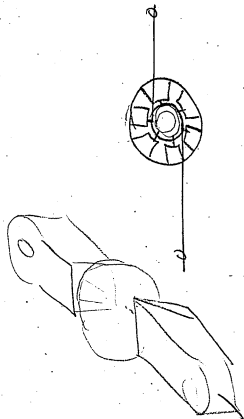


Patent









6

$$\frac{12}{16} \\ \frac{16}{28}$$

 $4\frac{1}{2}$  long.

$$24 \overline{) 1000} (36 \\ \underline{84} \\ 160 \\ \underline{168} \\ 16$$

1

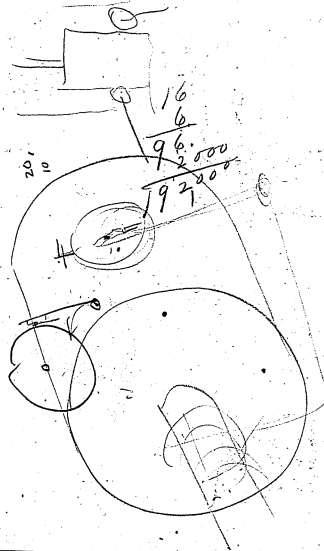
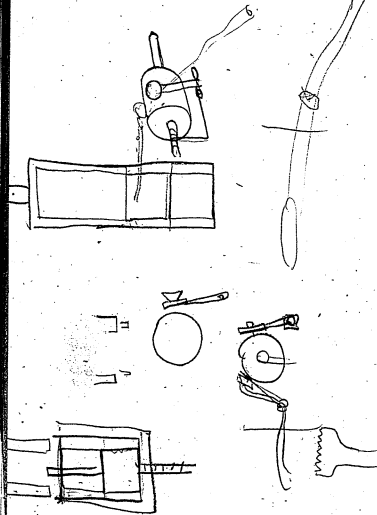
$$3 \overline{) 70}$$

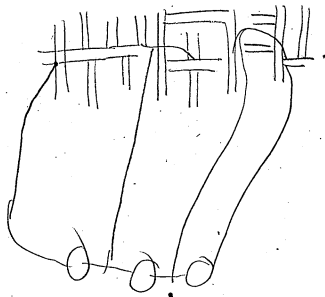


$$\frac{12}{108} \%$$

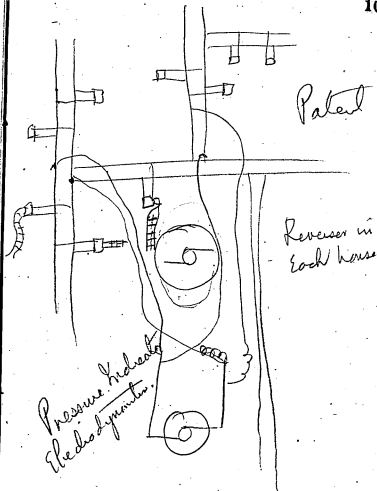
2000

19.200





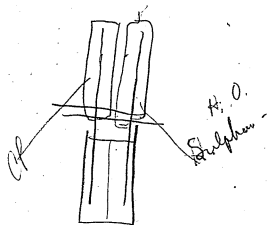
1000, 2000,



Patent

Reverser in  
each house

Pressure Indicator  
Electrodynamometer

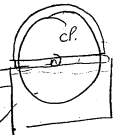
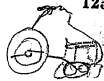


25  
15  
30

HCl

u/c

u/c

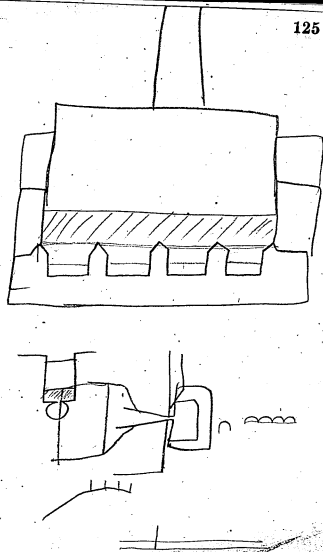
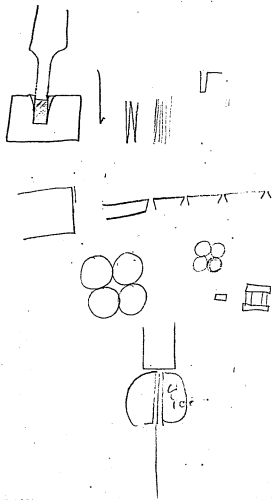


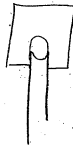
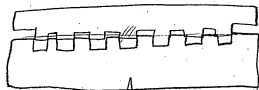
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30000  
2316000



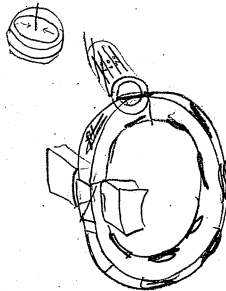
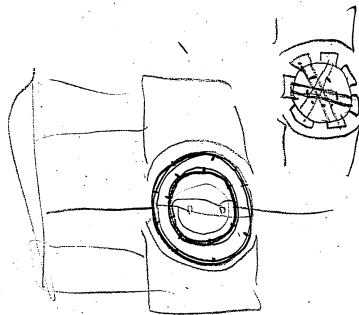
Soluble peroxide  
Lead

11-  
22 hp 1 hour  
Redhead Lead  
26 H<sub>2</sub> O<sub>2</sub> 16 H<sub>2</sub> O.  
SO<sub>4</sub>









$$\begin{array}{r} 350 \\ 80 \\ \hline 28000 \end{array}$$

$$\begin{array}{r} 350 \\ 36 \\ \hline 2100 \\ 1050 \\ \hline 12600 \end{array}$$

## Vails Lamp-

Content  
Surface -  $8 \times 10$  80. 3.50 long. 280. cm  
Surface. 36 1260.  
50 Valts. 70 ohms res, 16cp-

New lamps.

Contd., 50. — 260

Surface, — 5.2 inch long 12 48

6/10/80. Content 28 7/2 long - 19/66

Surface: 7 long 1260

50:

$$\begin{array}{r} 2850 \overline{) 108} \\ \underline{9250} \phantom{00} \\ 5600 \phantom{00} \\ \underline{2520} \phantom{00} \\ 2570 \phantom{00} \\ \underline{2400} \phantom{00} \\ 2700 \phantom{00} \end{array}$$

$$\begin{array}{r} 280 \\ 19600 \\ \hline 19 \end{array}$$

$$\begin{array}{r} 0 \\ 00. \\ 196 \overline{) 39200} \quad (200 \\ \underline{392} \phantom{00} \\ 000 \phantom{00} \end{array}$$

$$\begin{array}{r} 52 \\ 50 \\ \hline 260,0 \end{array}$$

$\begin{array}{r} 36 \\ 78 \\ \hline 252 \\ 28,08 \end{array}$

$$\begin{array}{r} 23.2 \\ 28.0 \overline{) 280.0} \\ \underline{280.0} \\ 0.0 \end{array}$$

$$\begin{array}{r} 67 \\ 52 \overline{) 312} \\ \underline{312} \\ 0 \end{array}$$

$$\begin{array}{r} 18.92 \\ 92 \overline{) 1260} \\ \underline{1260} \\ 0 \end{array}$$

$$\begin{array}{r} 468 \\ 499 \overline{) 24992} \\ \underline{24992} \\ 0 \end{array}$$

$$\begin{array}{r} 28 \\ 7 \\ \hline 196 \end{array}$$

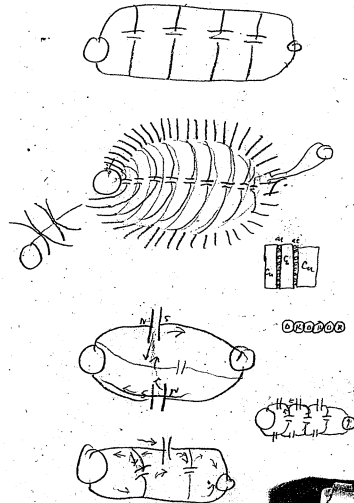
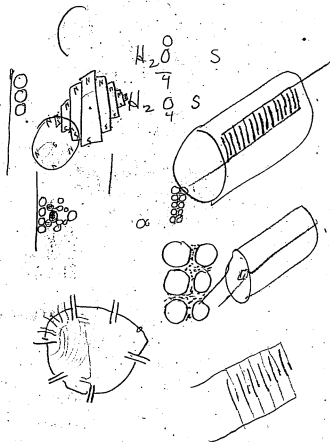
$$\begin{array}{r} 24 \\ 53 \\ \hline 72 \\ 120 \\ \hline 252 \end{array}$$

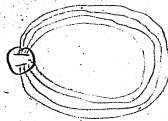
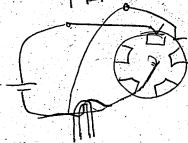
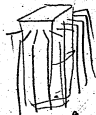
$$\begin{array}{r} 240 \\ 5 \end{array}$$

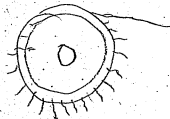
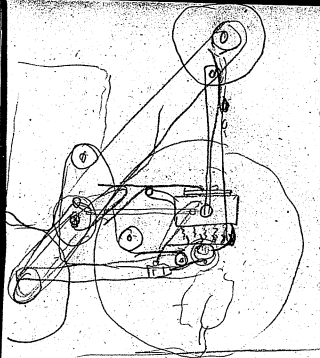
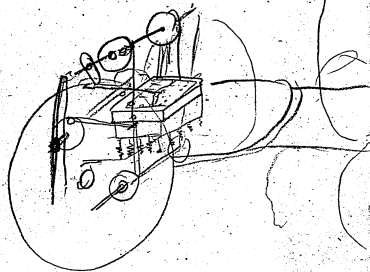
$$\begin{array}{r} 24 \\ 52 \\ \hline 48 \\ 120 \\ \hline 1248 \end{array}$$

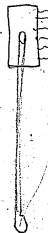




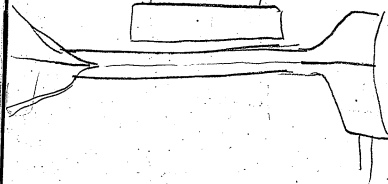
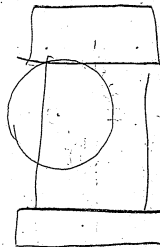
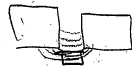
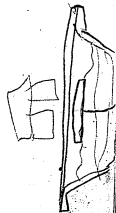
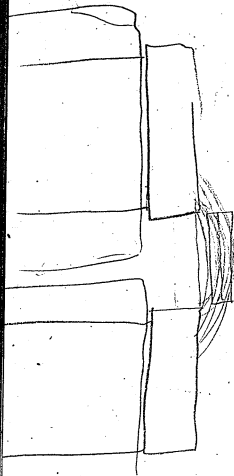




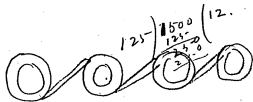








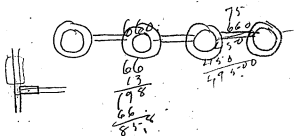
200



$$75 \overline{) 500} \quad (606$$

$$\underline{450}$$

$$500$$



$$80 \overline{) 600}$$

4

1000.

100.

Boiler <sup>10.</sup> \$25. } \$50.  
 Engine. 15. }

5 lbs Coal per hp. 1 cent per hour -  
 Labor.

500 ampere Dynamo - \$2000-

20 500 Amp - \$40,000

66 hp Each Electrical

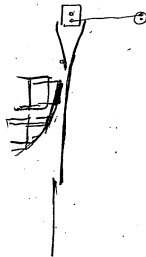
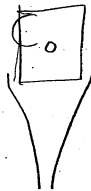
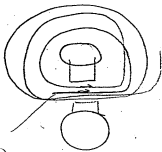
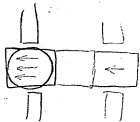
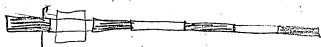
87 percent net:

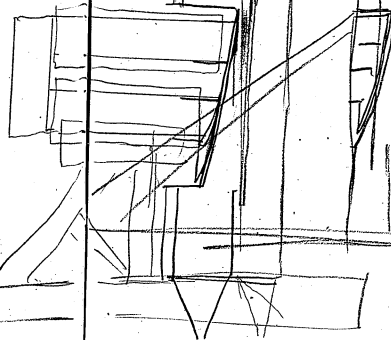
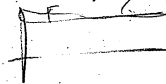
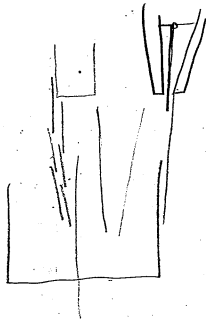
$$8 \frac{1}{2} \text{ hp extra } \begin{array}{r} 66.0 \\ 8.5 \\ \hline 74.5 \\ 74.5 \\ \hline 372.5 \end{array}$$

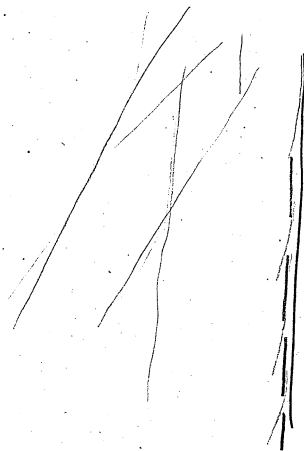
$$372.5 \overline{) 745.00} \text{ for boiler \& Engine. - } \$74500.$$

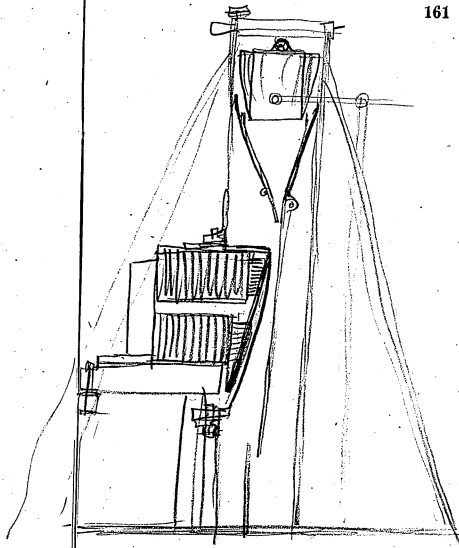
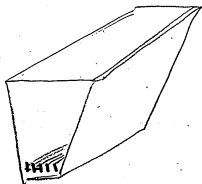
$$\underline{745.00}$$

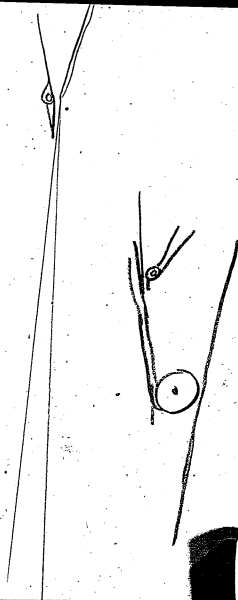
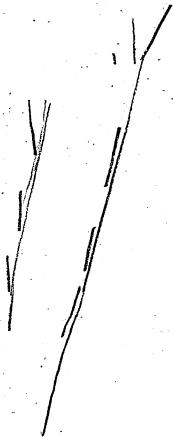
Cost, 24 hp -

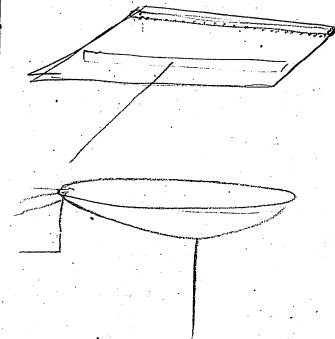
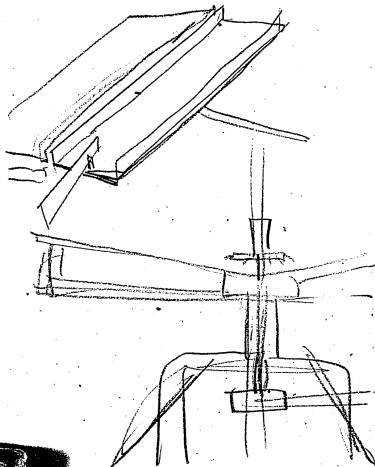




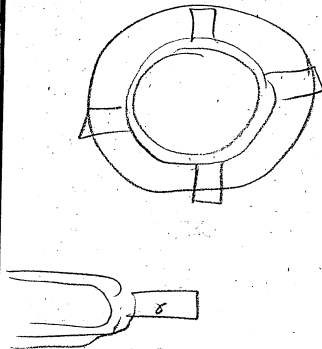
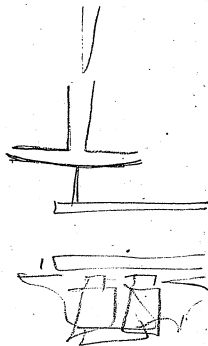


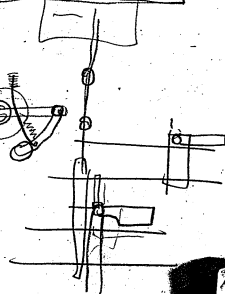
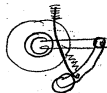
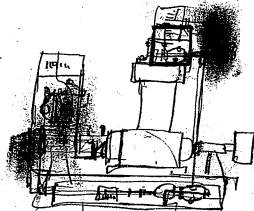
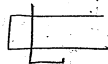
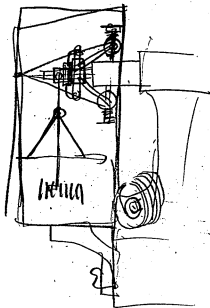


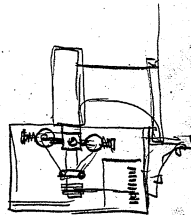


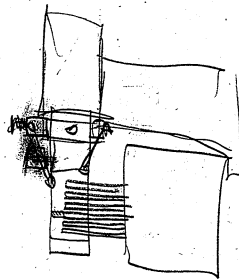
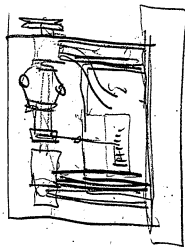


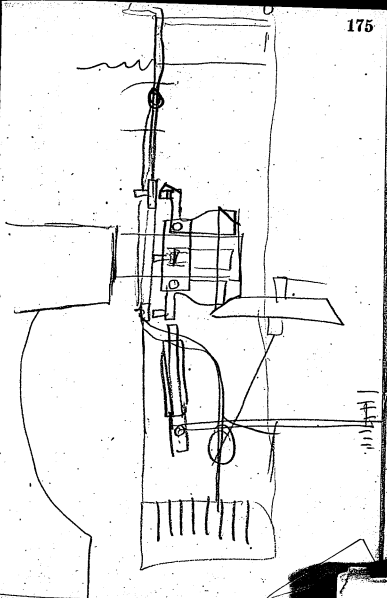
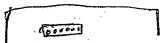


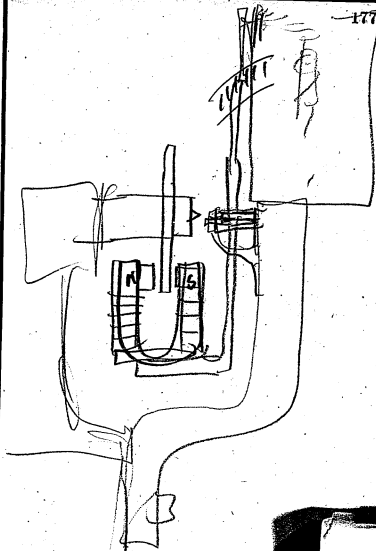


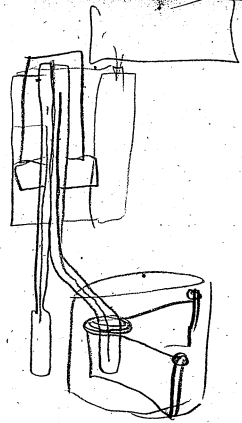
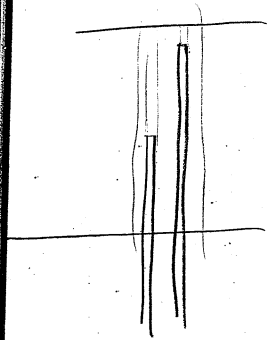


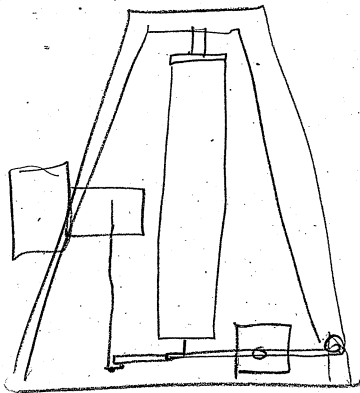




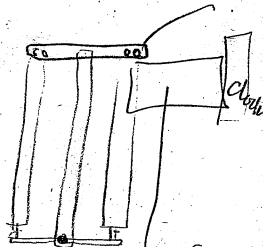
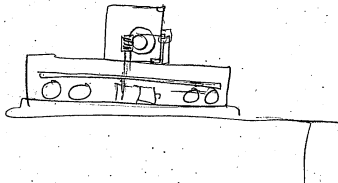




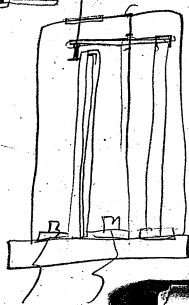








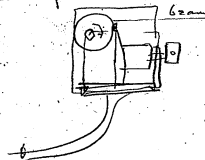
Water by  
Electric heat  
Exposure



## Experiments New Laboratory -

Running phone motor EMG relay on top for  
repeating WU Tel -

Probable surface of chalk effected by  
light - use diaphragm with mirror  
& heliostat, & condensing reflector or  
off lens make very narrow direct light.  
talk & turn EMG - if beam enters  
Copulantly for instant talking to heard  
probably to only for instant like  
Electron.



if works put in Alum Cell stop all  
heat & dry light - then try Ultra  
Violet or Actinic rays only -

Expts New Labaralve  
 Light effects chlorine <sup>+H</sup> close  
 a tube with Rubber diaphragm  
 with heating tube & chlorine & H  
 in proportion to form HCl - with or  
 without water to absorb HCl which  
 it does explosively - perhaps saturated  
 Cl water & free Cl with H ok -  
 let beam light end on Erlen  
 tube - vibrated from Mirror on  
 diaphragm - helioslot +  
 sun light -

---

Hozion apparatus Silent  
 dischg for forming synthetically  
 subs on Corneli's scale with  
 Res current was or high volt  
 dynam + silent dischg  
 tube - Multiple arc

$$\begin{array}{r}
 800 \text{ Lamp 1 mil. } 12000 \\
 1600 \quad \quad \quad 24000 \\
 \hline
 1600 \quad 2 \text{ mil. } 5. \quad 96000
 \end{array}$$

$$\begin{array}{r}
 1265 \\
 300 \\
 \hline
 1565
 \end{array}
 \begin{array}{r}
 100 \quad 1.40 \\
 200 \quad 70. \\
 400 \quad 35. \\
 800 \quad 1.72
 \end{array}$$

$$\begin{array}{r}
 3000. \\
 12,000.
 \end{array}$$

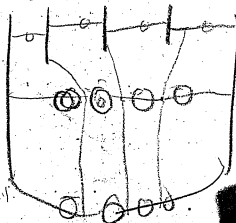
$$\begin{array}{r}
 33750 \\
 168750 \\
 33750 \\
 \hline
 4 \overline{) 50625} \\
 \underline{12656}
 \end{array}
 \begin{array}{r}
 75. \\
 10 \\
 5 \\
 15 \\
 25 \\
 40 \\
 6. \\
 10. \\
 3
 \end{array}$$

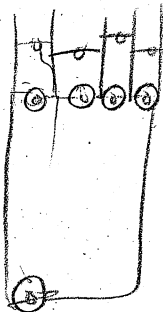
$$800 \times 800 - 4 = 24000$$

$$400 \times 4 \times 4 \times 4$$

$$\begin{array}{r}
 16 \overline{) 96000} \quad (6000) \\
 \underline{96}
 \end{array}$$

$$\begin{array}{r}
 200 \\
 6000
 \end{array}$$







Electric Lamp Expts Cont'd 195

May 1 1884

Tue

Pack some new stock filaments  
in powdered asphalt & run up  
to as high as possible say 600 fohr  
take out while hot & pour. It out getting  
filaments out & dis along off  
asphalt - then dip in regular  
asphalt solution & reprecinnings  
also Lincseed oil - Ent filament  
also Lincseed oil loaded with  
asphalt.

Dip preincinnaged fibres prelin  
to 500 @ 600 in melted  
asphalt ~~at~~ at 600 @ 700  
fahs - try melted sugar

Arrange to duplicate 234  
in our new process but putting  
film under strain -

Duplicate ~~in~~ a good new slide  
cans but using Carbon instead  
of metal boxes - Martin

Run some new stock through  
with powdered fusible metal  
securing film so they  
won't float, when metal melts.  
Hamilton

Put a pine slide in metal tube  
which stick has been soaked in <sup>90%  
set</sup>  
Saturated solution Tannic acid  
put some tannic acid in bottom  
bring up quickly in store of pump  
room



Tri bromide Benzene  
melts 198° boils at red heat

Twinkle metal

4 Bi - 1 Cadmium - 2 Lead 1 Tin -  
~~700°~~  
4 Bi - 1 Cd 2 Pb 1 Sn -

Antimony Trichloride

melts 73° boils 230 at  
pressure at mos a 160 in  
vac -

Stannous chl melts 249°  
boils 617°

Living Expts -

May 1 1887

Far



also put pine sticks in tube with  
Red oxide mercury in bottom  
to give off oxygen - (John Att)

preliminary fibres in following  
liquids as high as possible -

Melted Rosin - Anthracene,

Chrysene - mp 27° C Hexabromobenzene  
mp 300 C Hexachloroethane,

~~chl~~ C<sub>2</sub>Cl<sub>6</sub> - mp 182 C The

Chlorine Haloids may produce beneficial  
Chemical reaction Hexachlorobenzene.

mp - 222 C Try flow Sulphur  
to preliminary in melts 113 C boils  
447 C

Lamp Expts -

May 1 1887.

708

preliminary in glycerine,  
Olive oil, Sugar alone -  
powdered fine - phenol

180° C boiling pt,

Boil some fully Carbonized felicit.  
Secured in reg form in Sulphur  
acid out doors until they  
Gend - then take out + run  
Curva - take some relap in  
asphalt sat + run through  
whole of reg process -  
Marshall

Lamp Expts

203

May 1 1887

put some rego Carbons in strong <sup>J. H.</sup> water &  $\text{SO}_4$  sal put current on & oxidize the surface until very black - also put in ~~strong~~ nitric acid do same some selt more than others & longer - then treat with asphalt after they have been heated & washed to get acid out object is to remove the oil scale - Payne

Take hot Carbons & pass them through flame so they are partially oxidized treat with asphalt

Electric Lamp Expts.

205

May 1 1887

Tae

Take reg Carbon mounted on  
inside part. dip in Asphalt  
solution 24 hours seal in  
Lamp & then gradually bring  
ful up in Vac while pump  
running to Carbonyl Asphalt  
surface. slotting each time  
to permit gas to be evacuated  
Make 6 in this manner  
get curve -

Marshall

Lamp Expts

May 1, 1887, 207

ascertain on a reg set up at 80  
 The increase of Resistance every  
 hour until busted, then  
 take another and put at 80  
 selecting one of same capacity &  
 volts & want Res equal each  
 time to increase on the one  
 burning. As see what Cp will  
 come to don't burn the standard  
 only during test with Res -  
 object is to see how much  
 decrease in Cp is due to  
 increase of resistance -

Marshall

Lamp Expt. May 1 1887 tar 209

Melt some Zinc ~~and~~ get  
 a red hot plunge secured fibres  
 in it. also try Copper  
 molten in ~~the~~ white hot.

Run Curves also a curve after  
 being treated with asphalt  
 open through reg process -  
 Payne

Carbons ⑩ prelunges some  
 filaments in aqua regia  
 weak -

Hamble  
 also in Melted Sulphide Potash

Lamp Expts -  
May 1 1884  
Tag

Put lamp on pump with  
stop Cock under Hg -  
get Vac + work lamp regular  
then close cock + let it  
burn at say 80 c p near  
as possible for 2 hours. Keep  
pump running - then turn  
Cock + see if air has  
accumulated - Marshall

Try passing current through  
orig filament second to  
inside part dipping in  
dipped Mather Asphalt  
also sugar Payne

Lamp Expts May 1 1887 <sup>213</sup>

Try preliminary fibres in ~~the~~  
 luscid oil, luscid loaded  
 with asphalt, asphalt in  
 turpentine - Sugar etc in  
 Sealed glass tubes -  
 upto 5 @ 700 fahrs ~~in~~ (H. Hamilton)  
 also try Harold Combustion  
 with Carbon - Chl. Carbon  
 etc -

Make Couple Extra Grass  
 tubes suspend - then (John  
 Ott)  
 pine pieces. allow them to  
 remain in lamp heating slots  
 1 to 3 days ~~see of results~~  
 by time Keep record of time  
 & deliver to me



Lamp Expts May 1. 1887, 215

Float on surface of asphalt  
 & also sugar solution  
 baths, best Electrolyses plumb,

1 ~~also anhydrous~~, quite thick  
 so that when solution goes  
 down it will leave a

surface of plumbago - you  
 can do this in a small experimental bath  
 that will do for carbons at a time  
 also dust over film of

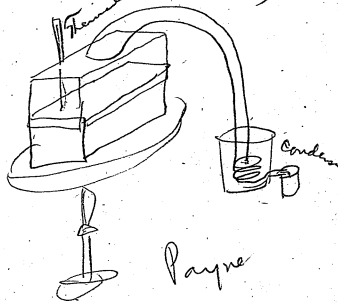
when fresh from bath plumbago  
 = powdered salt,

also try finest Magnesian oxide  
 alumina etc, this will

give good reflecting surface  
 make order of 15 each kind  
 W. H. Martin



Lamp bpts May 1. 1887  
Have box made iron Jaz

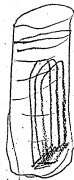


put iego in forms ~~up~~ second  
full with blg & prelungi-  
various speed Condensing  
blg - Sand bath

Lamp Expts.

May 2 1887 219

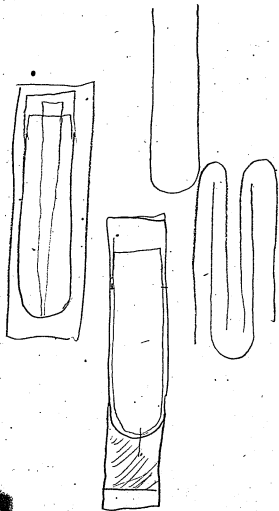
Preliminary in wood tar in  
sealed glass tube wood tar  
being same nature as that  
from fibre I suppose a  
thermometer can be sealed  
in tube - the end should be  
drawn fine so air can be  
let out easy -



fusible metal  
fibres will be  
kept separated  
& also have a  
tension on them  
in Carbonizing

Payne





Order No. for Hamilton



223

melted  
solid fat.

Sealed tube - Wood Tar. Thermos in box  
 shows nothing -  
 ditto. quickly as possible - a bunch of  
 new sticks ~~8~~ round - about 100 in  
 bundle, weighted with say 100 lbs to hold in shape  
 Same as above only powdered Rosin in tube  
 which melts.

Same as above ~~Guthrie's~~ flowers sulphur

ditto. finely powdered sugar &

" phenol.

" Linseed oil.

" glycerine,

" Mercury

" Linseed loaded with asphalt

powdered Asphalt,

powdered Sulphur & stearine

aniline oil

9/50

acetic acid.

Saturated Sol Sugar.

Paraffine,

Zn form.

2 pt sol of Caustic Potash  
Sul Acid -

2 "

pure water,

Chlorine Water - Saturated.  
Pentachloride phos 1 pt sol

M Force taken Hamilton order no. 25 are dipped <sup>in 62 sugar solution</sup> through packing to 900 in Carbon boxes. ~~with~~ carbon laid in Anthracite 10 mesh but to of per 80 mesh Canal Coal on bottom. Then given to Lawson to run through his final test not packing instead of  $4\frac{1}{2}$  mesh a new mesh equivalent to  $5\frac{1}{2}$  mesh to get 100 volts.

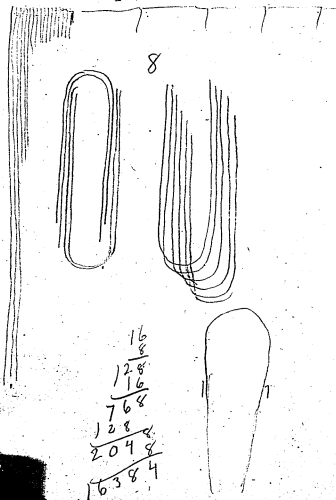
25 m to be run to 900 without dipping  
24 " " put in Lawson frame in regular manner ~~with~~ previously being dipped in 62 - 25 to be saved



The object of the experiment is to consolidate the carbon on the pump and prevent ~~the change~~ that portion of the drop in candle power due to increase of resistance. ~~It~~ which appears to take place in the first 2 or 3 hours at 80 candle. I think that bringing the filament up much higher than usual which with new clamp is probably possible + holding the peg there for some time that the fil will have the change taken out of it so when it goes to photometer room it will get a reading which will not change much after



you will probably find that  
 arcing will destroy some  
 of your lamps so you  
 better ~~stop~~ keep making putting  
 lamps in pumps until  
 you get the requisite 10  
 for a curve keeping account  
 of the number broken & how  
 broken it took to get the  
 10 - you will select Reg  
 16. C.P. lamps for this  
 test. with the shank broken  
 off & deposited by new pieces  
 to inside wires - If you  
 find that arcing bothers you  
 too much you can stop  
 it but putting about  
 100 ohms resistance



in circuit when you have the peg at the highest, the are ~~resistance~~ springs with greater difficulty when there is a resistance in circuit somewhat near that of the lamp - It is probable that the deposit at the clamps should be somewhat thicker than would be necessary with the present way of working as a magnet will attract an arc & have a strong impression that it would be difficult to spring

an arc if one of the magnets  
using on pump in Laboratory  
were used + powerfully  
energized - perhaps you better  
use my pump for the 54 pumps  
as they have magnets already  
on -

The great point is to  
bring the filament up on  
the pumps far higher than  
is now usual in fact the  
highest attainable limit  
that is practicable with the  
use of every device to prevent  
arcing -

These 3 sets of lamps  
should then be set up

at ~~the~~ 80 candles each  
 and the drop in candle power  
 taken every hour accurately  
 this will give us the value of  
 any of bringing them up  
 high on pumps & it may  
 also effect their life for  
 good or bad - End Marshall

Desbler Howell

5 Regular lamps to be  
 put up at 80 candles  
 a reading of candle  
 power to be taken every  
 hour & the change in resistance  
 of the filament taken  
accurately every hour

The object of the experiment is  
 to ascertain what proportion  
 of the drop in candle power  
 is due to a change in the  
 mere resistance of the  
 filament - by using a fresh  
 lamp & putting in circuit  
 a varying resistance.  
 The fall in cp from resistance  
 can I suppose be ascertained  
 I suppose 5 lamps  
 will be sufficient to  
 give a correct result,  
 Experiment No 2.

Select 5 bulbs  
 which have been blackened  
 They should be of various  
 shades from a slight  
 blackening to a very  
 much blackened one -  
 have Holzer carefully  
 remove the inside part +  
 broken Carbon, then taken  
 from a Regular lamp  
 which has been test  
 for Valt Cp + amperes  
 the inside part + Carbon  
 + seal this in the

flocculated bulb - ~~run~~  
 tell him to be careful  
 not to heat the bulb  
 up where light comes through  
 as the wind removed  
 some of the flocculation  
 the have them reexhausted  
 & not run up very high  
 on pump but just enough  
 to get air out. then  
~~you can~~ set them up  
 at same volts ~~as~~ &  
 get cp - The object of  
 the experiment is to determine  
 what proportion of the

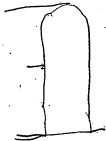
drop of Cp is due to  
 blackening - These  
 lamps should after you  
 are through testing  
 be mounted on a board  
 & the loss on each plate  
 marked & kept in your  
 museum for further reference  
 by looking at the tint  
 of a Gull & comparing  
 one can pretty accurately  
 determine the loss of  
 Cp by the blackening



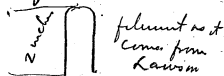
Which will be useful  
in future Experimenting  
if you don't think 5  
bulbs enough select  
such a number as will  
give us an argument octave  
End Howell

Martin Force -

25 fibres of each Kind &  
round of the different Kinds  
of stock sent me by Payne  
including Reg new stock maygrove  
& Hamilton, are to be sent  
round the hat binder in  
packed in about 40 mesh  
anthracite in Carbon boxes -  
and these are to be given

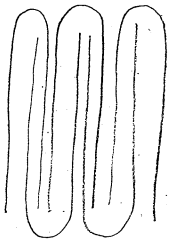


Lawson to be run through  
the full process after receiving  
them from him they are to  
be secured to ~~clamps~~ inside  
wires by deposit each  
filament is to be cut  
2 inches long after it is  
fully carbonized thus



Each is to have an order  
number ~~above~~ <sup>out of</sup>  
those of each order number  
that gets through pump

room select 10 for  
 a curv but have  
 accounts kept of number  
 of filaments that are  
 good that comes out of  
 the Carbonyl boxes  
 number broken - depending  
 ditto pump rooms an  
 important element to  
 determine value of a new  
 fibre is the breakage as  
 well as the life - These  
 filaments are not to be  
 treated in any manner



but just run through in  
 the old way this will  
 determine their value  
 independent of any  
 treatment, I suppose  
 you could string them on  
 your paper sieve pieces  
 for convenience & thus get  
 the 25 in two boxes,  
 these boxes should all  
 be mixed & placed in  
 various parts of Lausens  
 should ~~be~~

Hamilton.

You are to try the following Experiments all of which will require several weeks time & very careful manipulation otherwise they will not be of very much value. The experiments are the bringing up bamboo filaments quickly & also gradually in liquids etc in sealed glass tubes thick enough to withstand the pressure which will ~~come~~ from a temperature of 600 deg fahr. - These glass tubes should be about  $\frac{1}{8}$  of inch thick &  $1\frac{1}{2}$  to 2 inches in diameter

Closed at one end by fusion  
 like a test tube. the other end  
 should be open to permit the  
 insertion of the filaments -  
~~off about~~ which must be  
 secured in Carbon or metal  
 receptible so filament do not  
 touch side of glass tube  
 & so they will not float to top  
 in the liquid or when a solid  
 or powdered form becomes a  
 liquid - enough material  
 should be used to cover the  
 filaments entirely when the  
 tube is at angle of say  
 30 degs -

~~Then~~ <sup>259</sup> after the liquid or  
 powder etc is put in tube +  
 everything ready ~~then~~  
 it is to be taken into goz  
 force + sealed the end being  
 drawn out to a point so  
 that when the experiment is  
 finished the tip can be broken  
 off to allow of the escape of  
 the gases slowly - then the  
 tube is to be cracked at  
 point where it has full diameter  
 the filaments taken out  
 and soaked in a warm  
solvent of the material

used for instance if asphalt  
was the material used then

The filmlets can be washed in  
considerable quantity of  
Benzol slightly warmed on  
sand bath of linseed oil  
a large quantity of  
Turpentine will dilute it  
" so that filmlets when taken  
out will have practically  
no linseed oil on them &  
the turpentine will evaporate  
if sugar then water  
will dissolve it - always  
use a considerable quantity  
of water or other solvent  
to wash the filmlets





a chamber should be  
 used which will hold  
 say B ~~tubes~~ to 6 tubes  
 & heated by a gas stove  
 or other means, a Fahr  
 Thermometer should enter  
 the chamber the bulb being  
 amid the tubes so it will  
 get same heat as they do  
 the Column should appear  
 outside the chamber when  
 mercury stands at 100 deg  
 the Thermometer should be  $\frac{7}{8}$   
 capable of indicating up  
 to 600 degrees a very long  
 one is not necessary one about  
 12 inches long is sufficient

& are not so expensive.  
 The chamber should be arranged  
 so that the temperature can<sup>ed</sup>  
 be regulated very nicely  
~~deg~~ so that starting at  
 100 fahr it will go gradually  
 up to 600 deg in 8 hours  
 also be able to go to  
 600 inside of one hour  
 as I desire to make some  
 experiments rapid & slow -  
 should the tube explode  
 the chamber will prevent  
 the ~~glass~~ broken glass  
 from coming in contact with  
 the eyes. —

The carbons to be used  
 are regular  $8 \times 13 \frac{1}{2}$  -  
 with the shanks on same as  
 now. about 25 ~~elements~~<sup>filaments</sup>  
 should be put in each tube  
 except in the case where you  
 put regular forms in then  
 3 can be put in each form  
 & 3 forms used. making  
 9 carbons. You can get  
 instructions from me as to  
 best method of putting  
 the filaments together for  
 placing in the tube

after washing & drying the  
 felaminits they are to be  
 placed in the little paper  
 boxes with the Number  
 marked on the box & also on  
 a slip in the box - Each  
~~box~~ ~~also~~ Experiment should be  
 given a number, Thus  
 Hamilton Experiment NO 1 -  
 Variation NO 6

The tube Experiments being  
 Called NO 1 Experiment.  
 & Each tube a Variation  
 with a Number -

~~Each~~

There will be duplicate tubes in every experiment one of the tube containing the same material as the other will be gradually run up in temperature from the temperature of the atmosphere to 600 degrees Fahrenheit gradually during 8 hours -

While the other tube contains which is a duplicate will be run up to 600 degrees in one hour or as near that as possible

~~you should be~~

I shall require about  
~~20~~ 30 pairs of tubes  
 all ~~of~~ ~~most~~ of which will be  
 $1\frac{1}{2}$  inches diameter inside  
 measurement & thick -

Have Mr Holger order it  
 immediately so as to have it  
 by time your furnace is  
 ready - He will obtain for you  
 a Thermometer anything  
 relating to making furnaces  
 speaks to me & I will  
 have made -

all of the paper boxes containing  
order numbers are to be  
delivered to me -

The following are the materials  
to be placed in the tubes;  
please see if we have them all if not make  
list so they can be ordered immediately  
No 1 - Boiled Linseed Oil -

No 2 - Pure undiluted glycerine

No 3 - Mercury -

No 4 - Phenol (ie) Carbolic acid

No 5 - Paraffine

No 6 - Wood Tar

No 7 - Powdered Rosin 60 mesh

There should be enough powder  
put in tube so that when  
it melts it will cover

the filaments fully

No 8 - acetic acid glacial.

No 9 - 50 <sup>parts by weight</sup> ~~percent~~ of asphalt  
dissolved in 50 parts by  
weight of linseed oil

No 10 powdered asphalt 60  
mesh

No 11 Aniline oil -

No 12 powdered sugar this  
is sold in grocery under  
name of pulverized sugar  
& is very fine -

No 13 50 parts by weight  
of sugar + 50 parts water



- 14 pure water
- 15 Saturated Chlorine water
- 16 - ~~3~~ 5 percent solution of  
Caustic Potash in Water
- 17 5 percent solution of  
Sulphuric acid in Water
- 18 - Iodoform -
- 19 - ~~Flour~~ Flour of Sulphur
- 20 powdered fusible metal  
10 @ 20 mesh  
Formula 4 parts Bismuth  
1 part Cadmium 2 parts  
of Lead 1 part of Tin

These are previously fused  
together & then powdered  
I think it is brittle if not  
you can cut it up it  
melts about 175 Fahr -  
See that we have a supply  
of material sufficient to  
make 4 or 5 times the  
quantity needed

21 - Trichloride of Antimony

22 - Anthracene

23 powdered sulphide of Potassium

~~24~~ 24 - 5 percent solution of Chromic  
acid in water

25 - 5 percent solution of Nitric acid - 283

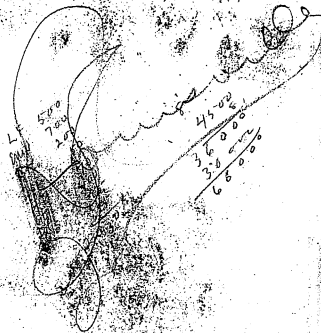
26 - Water 93 parts Caustic Potash  
5 parts pyrogallie acid  
2 parts

27. Chloride of lime fresh  
20 parts Water 80  
parts

28. Water 90 parts Hydrofluoric  
acid 10 parts - be very careful  
in handling the Hydrofluoric  
acid not to get any on your  
fingers or body it makes ulcers  
but after dilution with  
water it is not dangerous

I will probably give you  
other solutions in addition  
before the end of the experiment

Σ



#### LAMP FACTORY NOTEBOOKS, 1886

These notebooks cover the period June-December 1886 and contain notes, drawings, and calculations relating to experiments performed at Edison's lamp factory in Harrison, New Jersey. Most of the entries are by Edison and John F. Ott. One book contains entries by Mina Edison. Another book was used primarily by Ezra T. Gilliland and consists of notes and drawings pertaining to telephones, phonographs, and a railway telegraph and telephone, along with drawings by Ott for a village system generator. All of the other books relate to lamp experiments, but one of the books also includes drawings of Edison's phonoplex.

The books appear on the microfilm in the following order:

1. N-86-06-28 (1886)
2. N-86-07-07 (1886)
3. N-86-08-03 (1886)
4. N-86-08-24 (1886)
5. N-86-08-25 (1886)
6. N-86-10-05 (1886)
7. N-86-10-08 (1886)

**Lamp Factory Notebook, N-36-06-28**

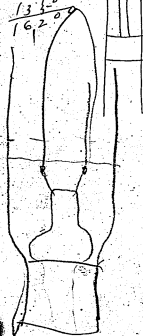
This notebook covers the period June-September 1886. All of the entries are by Edison. The name of John F. Ott appears frequently as a witness. The book contains notes, drawings, and calculations relating to lamp experiments. The lamps are numbered 1 through 18 and 159 through 222. Loose pages containing the results of lamp tests have been pasted onto many of the notebook pages. The spine is labeled "35." The pages are unnumbered, and the book has been used in both directions. Approximately 200 pages have been used. Some pages have been torn out of the book.

24-  
6.00  
144.00

32  
6.00  
19.20

675-  
27  
4725-  
135-0  
8,223-

24. 675-  
24  
2700  
1350  
16200

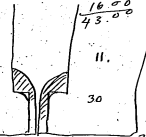


157.

10 30 - 1350  
2700  
1600  
43.00

675-  
43  
2025-  
2700  
27023-

1350  
10800



33  
675-  
33  
2025-  
2025-  
22275-

11  
11  
11  
12



33  
7.00  
231.00

24.

11

19/ 16.00  
15 2.  
80  
76

175.

100  
84  
16

157  
16  
906  
151  
24,1



June 28 1886

Expts on Lamps

- exp No 1 Gasolene washed 480 m  
2 Alcohol + KO - broken acc  
3 " " 115 min  
4 Nitric then run alcohol 90 m  
5 - Hot Bi Chrom K + SO<sub>4</sub> Run H<sub>2</sub>O 5 m  
6 HCl then alcohol  
7 Alcohol twice hot  
8 Bisulphide Gas only  
9 Soaked 1/2 hr alcohol clean  
clamps scarcely any air come  
off lamp or pump  
No 10 Alcohol afterward Bisulphide

No 11 Alcohol then bulb heated  
Continuously by Kerosen Lamp  
while in pump

com 152 at 76 cp. 398 at 80

June 28 - listed 195 rather block

Cp 50-90-82-80-72-64-65-62 60 56-<sup>40 min</sup> 52

NO 12 - lamp washed alcohol then run

off with Rosene lamp under it -

gave spectrum H, Very strong H $\gamma$

+ faint CO or CO<sub>2</sub> -

177 on scale shows very strong violet

line, this I thought was always a

CO line ~~60~~. 125 being the strongest

CO line but this 177 is 3 times

as strong as 125 in this lamp

hence it must be due to something

else. The spark g has only flat

points 2 lines at 130 + 131 -

Banker says 177 is H line

NO 11 - at 16 Cp - 155 - Cp hp - 418 at

80 Cp - drop in Cp - <sup>20 min</sup> ~~80~~ 84

<sup>40 min</sup> 40 - 65 - 60<sup>m</sup> 64 80<sup>m</sup> 52 100<sup>m</sup>

~~50~~ - 51. 120<sup>m</sup> 47

Quite block lasted 135 min

No 10 - Bisulphide C + first  
alcohol -

149 c perhp at 16. 398 at 80 -

Lasled 365 min moderately

block -

1st hour 2 3rd 4 5  
drop 80 - 72 64 55 - 48 44

6th 40 c power -

---

No 13. no alcohol Heated by Kerosene  
lamp - fused KO in bulk -

Spectrum Strong mercury - Line 177

Sodium line, <sup>fault</sup> Trace of Red H line

Line  $106\frac{1}{2}$  - no signs of CO -

Arcd at 40 min - didn't vary in

Cp Economy 152 at 16 411 at 80

133  $\frac{1}{2}$

160

101

115

96

93  $\frac{3}{4}$

91  $\frac{1}{4}$

86  $\frac{1}{2}$

138

156

10  
8

91 93 96

No 12 Blackening on glass absorbed  
gases so couldnt get a spark  
after heating lamp. Vac Low -  
H brilliant, CO moderate Hg  
Very strong. Sodium moderate.

14 - Phos anhy + K. Lamp nothing in  
lamp heated Kerosene lamp -  
K melted got air out finally.  
Kept low heat absorb CO.  
Sealed lamp off cold being cold  
5 min previously hot bath  
Lamp + filament gave plenty  
Hg = allowed cooling lamp  
+ slightly heating K. no Hg.  
Couldnt get a spark through  
Sealed off spark gauge  
Set lamp up for curve - sealed  
gauge - got no Hg - but very  
strong. H - also Amco 133  $\frac{1}{2}$  160

101 113- 96 93  $\frac{3}{4}$  91  $\frac{1}{4}$  86  $\frac{1}{2}$

158 156 -

NO 14 (asle) 80 m - 151 c per hp  
406 at 80

80c	20mm	40m	60	-80
88	-	74	65	62cp -

Rather black -

NO 15 Exhausted with Kerosene Lamp  
not heated on Vac - sealed off and  
set up -

NO 16 -  $\frac{1}{500,000}$  of atmosphere, lots  
mercury - also CO faint Hydrogen  
modern + N. fooled with it  
inapparent arcs due to sparks being  
in when Lamp lighted - Vac  
got so so hot Couldn't pass  
spark at first, heated & made

mapent arcs thru knocked vac down  
slightly saw H, Hg + CO - afterward  
by absorption of glass or clamps got  
so high couldn't get spark through  
Sent it to get curve main report  
taken. 120 volts to get 16 candle.  
67 ampere, haven't balls nuffs set  
at 80 -

20

17 another lamp not heated by Kero or filly  
current, absorption K + Charcoal  
in tube, heated filament after  
sealing - Knock vacuum down  
+ charcoal after laying  
all night didn't appear to  
absorb - Hydrogen + Nitrogen  
strong pink in clamps -  
CO very faint, NO Hg - Sept. type  
for curve -

18

Iodine in Lamp with Copper  
 Hg<sub>2</sub>D - to absorb it & prevent going  
 in bulb pump - arc'd 7<sup>st</sup>  
 min 161 cphp at 16 438 at  
 80. 80<sup>20 min</sup> 82<sup>40 min</sup> 68<sup>60 min</sup> 60  
 whitest deposit of Co<sub>2</sub> at first.

17 Iodine in bulb -

lasted 60 min - 168 cphp  
 at 16 - 462 at 50.  
 80<sup>20 min</sup> 78<sup>40 min</sup> 70 - whitest  
 verdence deposit near clamps.

122 - intensity 12 - sharp

108.5 " 9 "

114.5 " 8, slowly increasing

fluted spec nitrogen

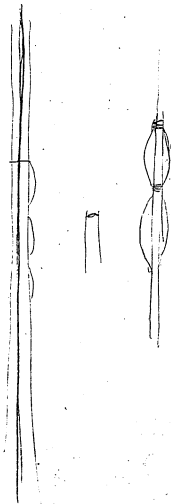
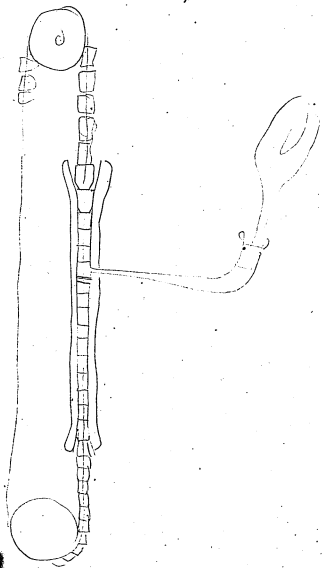
CO strong

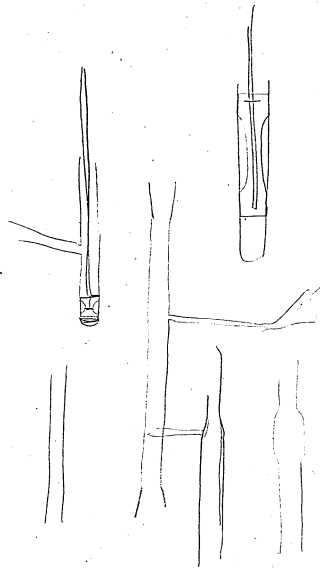
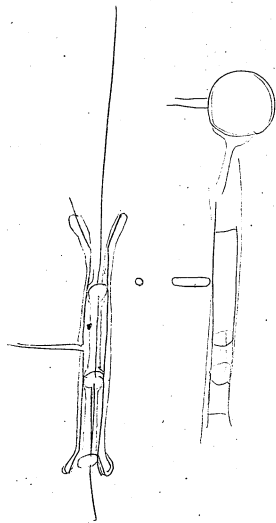
122 gradually disappears

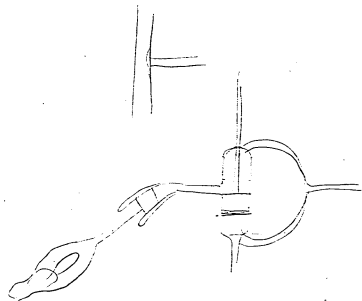
A line there

New pump









83  $\frac{1}{2}$  - H.

142  $\frac{3}{10}$  H.

179  $\frac{9}{10}$  H.

125  $\frac{8}{10}$  - Carbonic acid  $\text{CO}_2$

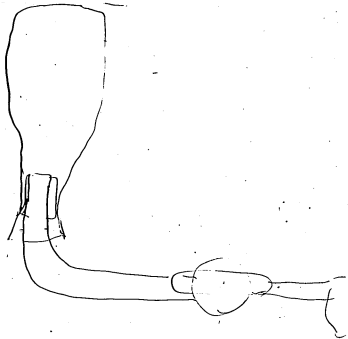
109  $\frac{7}{10}$  -  $\text{CO}_2$

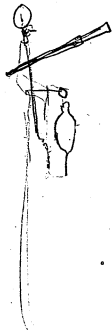
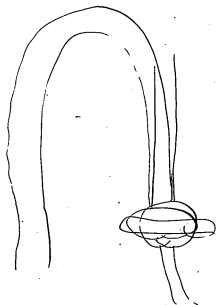
95 -  $\text{CO}_2$

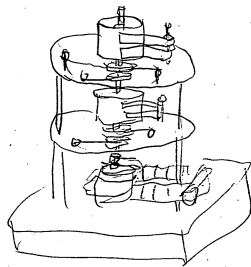
A spectrum of a tube taken off of a washed Hydrogen pump. No spark having passed through it. Another gauge on the same pump which had sparks pass through it several times, showed no carbonic acid. This shows that carbonic acid or organic matter was either on the magnesium electrodes or on the glass.

These readings were gotten by making the slit for each line very fine, reading from the left-hand edge and focusing both

the scale and telescope for  
each line. The width of the line  
I have called  $\frac{2}{10}$  of a degree.





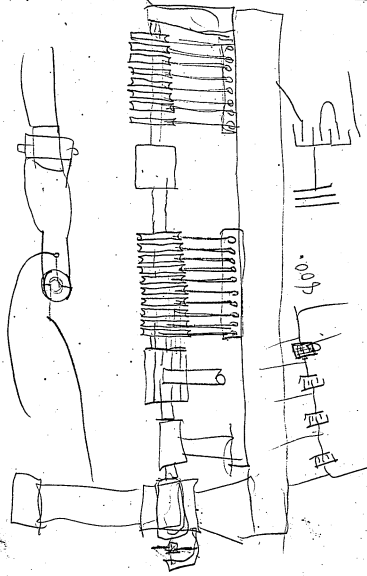


30

180 20000  
3 60000

800 - 1550 / 1080  
600  
7000  
740  
600

180.



400.



$$15000 \times 15000 \times 5000$$

$$\frac{15000 \times 15000 \times 5000}{10000 \times 10000 \times 10000}$$

$$\begin{array}{r} 220 \\ 400 \\ \hline 3/9 \ 0000 \\ 9/30000 \\ \hline 3333 \end{array}$$

2000

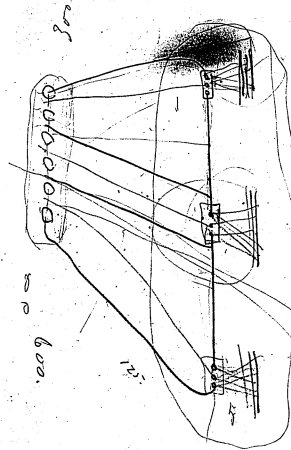
1000

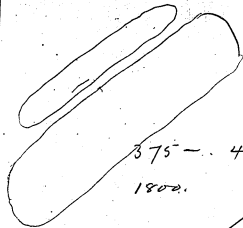
$$\begin{array}{r} 13333 \\ 11111 \\ \hline 22222 \end{array}$$

$$k = \frac{Q.P. \times D}{100000 \times V} \text{ for main system}$$



100000



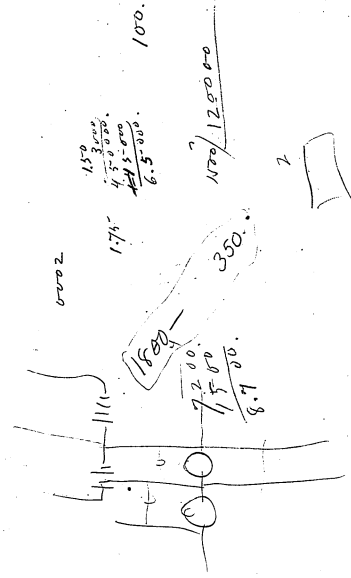
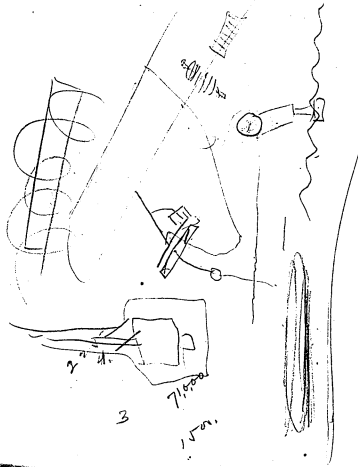


375 - 400

1800.

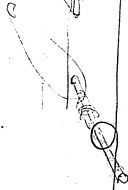
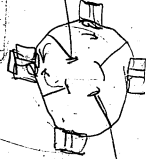
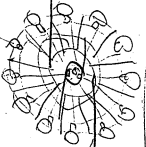
1800.



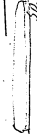




500.  
800



3000;



3

85 140—



3000

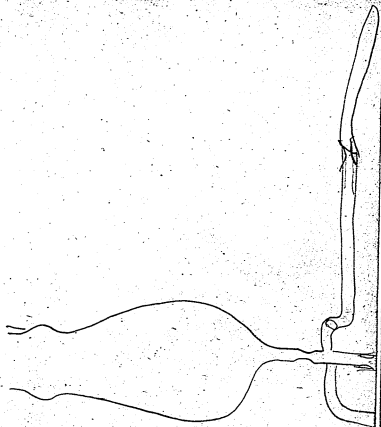


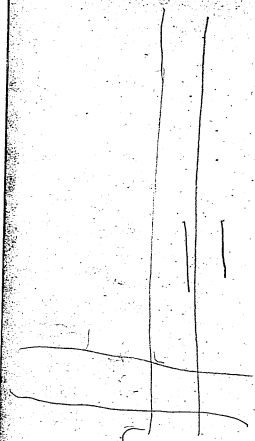
3000

41

XE-172

N-86-06-28





J. S. M.  
oil - glycerine; - pump Hot - use paraffin;

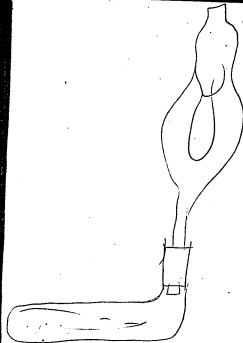
Isoline; to attack Hg + Antimony or Bismuth  
to absorb -

Iron spiral. metallic spiral. iron pref'd -  
Kept Hot by Current or combustion.  
tube containing iron or metal or  
material which heated decomposes  
water & produces a solid oxide -

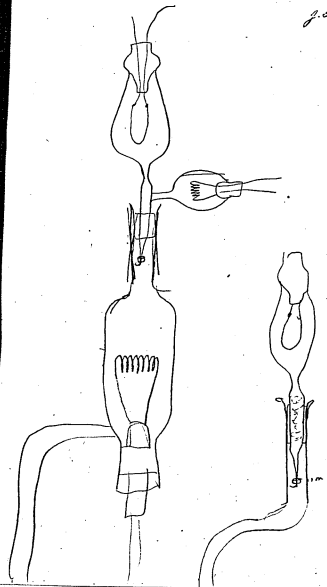
Use extra iron filament in  
lamp which is to be heated  
by Current after vacuum obtained  
while lamp hot by kerosene lamp  
afterward raising same to melting  
point & breaking it & drawing  
it down by magnet,

straightening filaments,

J. F. M.



J.F. 18





Aug 10 1886 - J F M

Made 6 lamps with  
telephone lampblack which  
is good conductor, an extra  
platinum wire passes in lamp  
& lays inside lamp down  
where it is sealed - The lampblack  
lays on bulb the lamp being  
inclined it is heated by  
kerosene lamp to drive off  
gases & decompose Hydrocarbon  
& eliminate water - after  
lamp sealed off the lampblack  
is shaken down to bottom of  
globe where it comes in contact  
with the extra platinum wire  
lamp is then set up at 80° C  
the extra platinum wire is  
connected to positive & some  
lamps are connected to

Aug 10 1886 TAE J.O. M

Negative wire outside lamp  
tests show that when wire  
connected to positive life is  
longer. It may be that when  
connected to negative it  
has a bad effect on filament  
& the reason why lamps  
last longer on p is there  
is no effect, I have also  
made several lamps  
with carbonyzed anthracite  
Coal powder. This gives off  
scarcely any gas & doesn't  
dirty the lamp bulb -  
The p wire to Carbon powder  
gives best results, I notice  
that the blackening instead

Aug 10 1886 TAE J. F. Webb  
of stopping short at clamps  
Extends clear down below  
Clamps to surface of the  
Anthracite, - ~~BB~~

I am trying putting a  
Coating of glacial phos.  
acid on inside globe &  
connecting it to the wire  
that is near the seal so the  
potential of the globe  
will be the same as the  
Clamp -

159

Aug 10, 1886 J. F. M.

Unwashed Undried

powdered anthracite in  
side tubes extra wire  
leading into inside part  
Anthracite heated with  
Kerosene lamp worked  
regular way reversed  
Current, worked anthracite  
in bottom of globe after  
sealing off lamp  
Then sealed side tubes off -  
fil. shing clamp & globe  
Clean -

160

Aug 10 1886

J. A. D. H.

Same as 159

fil shing globe + champagne

161. Aug 10 1886 rec  
J.S.M.

Same as 159

polishing globe + clamps

Clean

162. Aug 10 1886 -  
J. S. Webb

Same as 159 except there  
is 3 times as much  
anthracite, so it will  
nearly touch wires as  
they come into vacuum -

ful shiny clamps +  
globe clean -

163 Unwashed + undried  
J. S. M. M.

Powdered glacial phosphoric  
acid put in globe little

water put in - put on drier  
+ dried hot, then allowed

Cool - put on pump worked  
regular way -

clamps & globe clean  
flushing -



Aug 10 1886 - tag  
164 - Unwashed J. F. H.  
powdered gloeocal phosphoric  
acid a little water in globe  
to make conducting surface  
Extra wire into vacuum  
down at seal - put on  
drier & heated, cooled &  
then put on pump heated  
with kerosene - Current  
revised - fil shiny  
globe little whitish.  
Clamps clean -  
to leave its <sup>extra</sup> wire connected  
offers its to 163 - peculiarity  
is that inside part little yellow at  
globe near clamps.

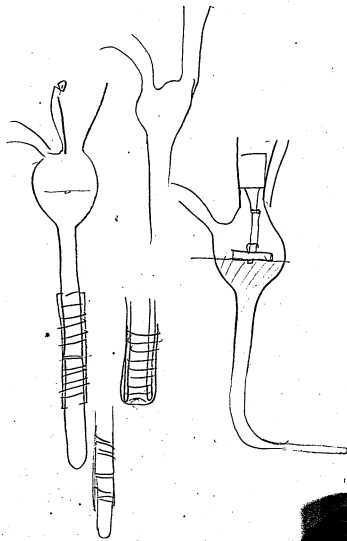
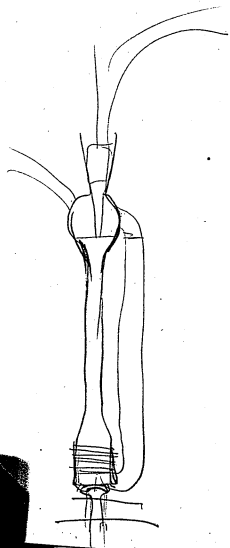
165 - <sup>Aug 10, 1886, gas -</sup> Unworked undried -  
J. F. M.

1 Milligram Naphthalin -  
Exhausted regular reversed  
Current - Clamps clean  
globe clean fil shiny  
run fil up higher than  
usual by running peg  
Down quickly -

1166 - Aug 10 1886. Jas

Same as 165 - J. F. H. H.

appearances same -



Aug. 10 1886 Tar

167-

J. S. M.

Dried on Drier -

2 milligramms Naphthalin  
in globe - Let it burn  
at about 16 @ 20 candles  
as it seems to deposit best at  
lower incandescence on bringing  
it up high the globe was  
very much whitened there  
seems to be a chemical  
reaction taking place -  
fil very shiny by deposit both  
clamps although I didn't  
reverse -

168 Aug 10 1886 Tue -

J. S. Webb

Dried and dried -

2 milligrams terchloride Carbon  
got vac then quickly run to  
about 16 cp then let it stay  
deposit good at this cp -  
late gas comes off & still  
let it burn notwithstanding  
the great amount gas - don't  
think it Chlorine as it  
didn't dirty tube but very  
little; globe kept perfectly  
Clear of blue; a small  
amount whitening; took place  
both sides near clamps perhaps  
Chloride Copper - run it up high  
didn't whiten any more but  
when very high blue came in  
when ~~run~~ <sup>down</sup> clamps, clear globe  
Clear & fil very shiny -

7/10/86 No. 169  
 5-amp. Res. 74th - Camp Q.D.  
 H.P. 14.4 @ C.D.  
 106 - 75 - 141 - 3539 - 9.32 - 149" 16  
 138 - 108 - 128 - 6592 - 5.01 - 401" 90  
 net. 40 - 90 - 353 - 665 - 936  
 up - min - min - min - min - min  
 80 - 80 - 72 - 50 - 40 - 36  
 Minutes lasted 96.0

Not very black for life  
 Clamps clean for dead block

Aug 11 1886 -  
 169 - Dried - J. 4. 6/16

1 milligram terchloride  
 Carbon - worked neg  
 not reversed - blue in  
 globe took it off p -  
 rather quickly globe  
 clear filament shiny  
 but cant see that there is  
 any deposit of any  
 consequence. Clamps clean

170

Dried - J. S. 11/11

Silicon  $\frac{1}{2}$  thumbful  
heated by Kero - Extra  
was in vac to connect  
to it - one clamp  
moderately clean other  
dirty fil shiny -



171 -

Dried - J. F. Otto

1 Milligram Anthracene -

didn't heat with Rosen -

Clamps clean filament

Very shiny poly deposit slightly

globe yellow tint all over

White volatilized anthracene

in neck

9/10/86 No 171 - Box 8  
 V-amp - Res - Filter Lamp C.P.  
 100 - .71 - 148 - 3318 - 9.94 - 109 - 16  
 138 - 1.06 - 130 - 6459 - 6.11 - 409 - 80  
 set 50 260 570 805 980 1240 1480  
 af - min - min - min - min - min - min  
 80 - 72 - 56 - 40 - 34 - 33 - 31 - 30

Minutes tested 1505

globe only yellow  
 fil Black clamp clean

Aug 13 1886

TAE

J. S. Webb

Tried several lamps having filaments  
Coated with Alumina, Magnesia —  
Calcium, Beryllium Zirconia —  
from their chlorides & acetates —  
dipping fibres in solution heated  
of Kerosene chimney to decompose  
then passing quickly through  
flame — The Coating holds on  
filament up to about 20  
to 25-cp then it seems to  
jump off although some  
filaments hold very well —  
The contraction of the oxide while  
the filament doesn't contract  
but very little causes this  
Cracking

Aug 13 1866

701

J. S. Little

Martin has dipped a dozen Carbons  
in Coal tar in Bengal & dipposed  
in water then dipped them in  
finely powdered Oxide of  
Aluminum, Magnesia, and  
put them in mould & they  
are to be run through the  
Carbonizing process, the  
Theory being that the Tar  
will Carbonyze & lock the oxide  
together - the coating is  
very fair though not  
complete - I am getting  
ready a lot of specimens  
about  $\frac{1}{2}$  Carbonized @  
brought up to 600 deg fahr  
& these I am going to dip

Aug 13 1886

J. F. M.

in Tar Licorice etc & then  
in infusible oxides & then  
run through to final Carbonization  
the shrinkage of the Carbon will  
then be about equal to the  
tar Carbon - also I am going  
to dip some bamboo filaments  
in tar & ~~the~~ infusible oxides  
& Carbonize in regular way.

I am also going to soak  
fully Carbonized filaments  
in tar - Licorice & other  
Carbonizable ~~top~~ materials in  
Liquor & shape soaking  
the filament before  
Carbonization also when

Aug 13 1886 TAC

When partially Carbonized  
(this is probably the best period)  
& when fully Carbonized  
so as to fill up the spaces  
& breaks due to the initial  
Carbonization of the Bamboo,

J. F. H.

9/14/86 No 172 Box 2  
 v-amp - Res - Fth - Lamp C.P. @ C.R.  
 113 - 73 - 185 - 362 - 9.11 - 146 - 16  
 147 - 110 - 134 - 7167 - 4.60 - 368 - 50  
 set 80 - 98 - 110  
 up - min - min - min  
 80 - 76 - 64 - 52  
 Minutes last 220

Rather dark for life - clamp  
 perfectly clean fil dead block

172

Dried Aug 13 1886  
J. H. J. E.

2 Millegrami Chl Carbon -  
 it all disappeared before heated  
 lamp - run it to red white  
 quickly & allowed it burn  
 for several minutes then  
 rather high - reversed  
 globe clean clamp  
 Clean fil not as shiny  
 as it comes from Carborundum

173 - Dried Aug 13 1886 <sup>8:45</sup> ~~7:20~~

2 milligrams of Terchl  
Carbon in glass tube  
set about 16 Cp good  
shine afterwards went  
away so that the filament  
is not as shining as  
it came from furnace -  
clamps & globe clear -

9/14/86		10/1/86		Box 3	
V. amp	Res. Filts	lamp	C.P.	H.P.	H.P. @ C.P.
100	73	139	3230	1021	163 " 16
132	104	127	6061	3.44	935 " 80

set	50	90	180	470	570	1175	1255	1575
cp	min	min	min	min	min	min	min	min
po	67	60	50	44	42	36	33	31

globe not very dark much less  
than stayed at yellowish cast

Minute lasted 1630  
Globe clear

Box 6.  
 9/14/86 No 174 Lamp C.P.  
 W - amp - Res - Fths - H.R. - H.R. @ C.P.  
 104 - .78 - 133 - 3575 - 9.23 - 148 " 16  
 135 - 1.11 - 121 - 6636 - 4.97 - 098. 80  
 Set  
 up -  
 80 -  
 And in 2 minutes

174 - Dried

Aug 13 1886

Tube with 2 milligram  
 Terchl Carbon -

brought it up quick.  
 fil no brighter - no blue  
 took it off before really  
 good vac as wanted to  
 get it off before Hg  
 had chance get in  
 no blue on clamps.  
 Clamps not cleaned  
 fil no more shiny than  
 regular globe clean.



9/14/86 11<sup>0</sup> 175 Box 5  
 v-amp - Res - 7th - lamp C.P.  
 97 - 74 - 131 - 3185 - 10.36 - 166 - 16  
 127 - 105 - 121 - 5885 - 5.61 - 449 - 50  
 set 60 250  
 up - min - min.  
 20 - 76 - 50  
 Minute lasted 290

globe yellowish black  
 Clamps pretty clean fil black  
 white at neck globe

175 =

Aug 14 1886 tag  
 Dried several hours  
 J. S. H.

5 milligrams Chl Carbon in tube  
 put in good vac & then quickly  
 run up to 90 @ 100 cp then  
 put it back to 25 cp & let it  
 run - fil. deposited on -  
 globe clear except at neck  
 yellow white deposit clamps  
 not cleaned no halo or blue  
 in globe took it off before  
 good vac

27.7.21

Aug 14 1886

J. S. G. H.

Put two regular Carbars in  
platinum Clamps, then <sup>or dipped</sup> soaked in  
Coal tar several times, drying  
slightly after each dip —  
Then gave them to Joe to seal in  
also another Carbar in platinum  
Clamps clipped several times  
in liquorice water gave to Joe  
I propose to slowly heat lamp  
from low heat as above to  
about 600 Fahr put a pump  
on & bring up slowly as to  
Carbonyl — The O. of the  
Liquorice will probably  
Oxide the whole of the Carbar  
if not sufficiently carbonyl  
the driver — but the the will  
Carbonyl in vacuum or I think

176 - Dried with heat <sup>of 276</sup>  
 fil in flat clamps soaked  
 several times liquorice  
 globe clear fil bright  
 clamps dusty -

9/14/86

N<sup>o</sup> 176

V - amp	Res	Filts	clamps	C.P.
			H.P.	H.P. @ C.P.
113 - .75	- 187	- 8760	- .878	14 " 16.
147 - 1.10	- 134	- 7167	- 4.60	- 568 " 80.

set.  
 up -  
 80 -

Work immediately.

9/14/86 No. 177 Box 5-  
 v-amp- 82 - 7 lbs - 14.2 - 14.2 @ C.P.  
 116 - 82 - 141 - 4203 - 7.85 - 126 .. 16  
 150 - 1.18 - 133 - 7520 - 4.39 - 367 . 80  
 pit 50 60  
 up - min - min.  
 80 - 96 - 80

Minutes listed 80

globe yellow clamps dirty ones very black  
 white around neck globe  
 fil browned

177- Dried no heat - Iodine in Drai

J. F. 106  
 Iodine in phos Cup -  
 got sealed tube & run quickly  
 to 100 cp nat bet air came  
 off no halo no blue - this  
 may be due to dirty pump  
 the Iodine drier & coldly  
 must put something in to  
 catch it before it get to tube  
 think Almagmatel Copper  
 answer & use no Iodine in  
 cup only in drier -  
 fil nat shiny seems to be  
 acted on clamps  
 untouched -

178 Dried on drier with heat,

Soaked in Tar - J. F. Allen

Clamps don't hold

179—

Dried without heat or drier  
 Godine in drier - j. 5. 11/16

Godine in phase Cup - color splashed  
 the pump didn't dirty so  
 bad but it got vac -  
 run it up quickly fell  
 Very shiny - slight halo  
 after running little while  
 no blue in globe -  
 Clamps dull.

9/14/86 Nov 179 Box 8  
 V-airp - Res - Fills - Lamp CP  
 103 - 70 - 147 - 5125 - 10.36 - 166 - 16  
 136 - 100 - 136 - 6017 - 5.48 - 438 - 80  
 221 - 80 - 125 - 1/2 inch fil shiny  
 44 - min - min. near clamp -  
 50 - 70 - 56 One clamp has  
 lamp block on P clamp  
 Minutes tested 265

180.

Dried on drier no heat

Godine in drier - J. F. 11th

Godine in phos Cup - pump dirty & thick  
 fil rather shiny. didn't get good  
 vac - globe clean clamps  
 untouched no blue or black -

9/14/86

No 180

Box 2

v. - amp. Re - 7 lbs. lamp. O.P.  
 107 - .77 - 139 - 3628 - 9.09 - 145 " 16  
 140 - 112 - 125 - 6946 - 4.75 - 280 " 80

set 60

sp. min.

80 - 80

Are'd. Minute lasted 90.

globe yellow white  
 fil still shiny

9/14/86 No 181 Box 7  
 v- amp- lbs- Fills- Clamps C.P.  
 106-79-134-3716-5.87-142-16  
 137-110-129-6780-4.91-328-80  
 Lit 50-50  
 up-min-min  
 80-84-80  
 Minute has led 180

Yellowish globe fil dead black  
 Clamps dirty white deposit near  
 Clamps then deep yellow

181- J. F. 0th  
 Dried for  $1\frac{1}{2}$  hour and drier  
 without heat - Iodine in drier  
 put in pump with U shaped  
 tube with Copper shot cleaned  
 by SO<sub>2</sub> - new phos anhydride  
 & 10 @ 15-milligram Iodine  
 on top of phos anhydride -  
 got quick Vac - no halo  
 no blue, brot it up very  
 high clamps get clean  
 when heat on fil but  
 quickly afterwards darken  
 by residual Iodine  
 fil very shiny - ~~use~~ took it  
 off moment tube showed  
 clear - hence not very good  
 Vac - globe clear -



182 - Dried on clean drier <sup>J. 5. 1886</sup>  
 with only phos anhyd & on  
 only 5 minutes -  
 Copper plated Clamps coated slightly with  
 silver Cyanide Solution.  
 put on pump & quickly Exhausted  
 very little air came off very  
 quickly on almost instantly  
 clamp very little of any air  
 came off - the silver nearly  
 all volatilized on neck of globe  
 leaving clamps Copper Colored  
 fil not very shiny

9/15/86		No. 182		Box	
V-amp	Res	Filth	Clamp	C.P.	H.P. @ C.P.
110	175	140	3672	8.99	144 * 16
143	110	130	6737	4.74	379 * 80
det. 50	115	240	Globe rather		
of 4 min	min	min	dark		
80	80	60	54	Clamp shiny	
				fil black	

Minute lactid 888-

183 - Dried 10 min - J. S. M.

Long tube with about 8 milgms  
Chl Carbon - got vac then brought  
it up rather quickly + got  
vac before much Chl Carbon  
Volatilized then brot to white heat  
+ heated ChlC with Kerosene  
good deposit - a very white  
volatile substance apparently  
2 of them in vac. Clamps  
dirty had Copper shot in  
U tube but didn't seem above

Chlorine - good vac -  
filshiny - although not  
Exhaustively so -

184

Dried -

J. F. 1888

Platina Center piece -  
fil mod shiny - clamps lead  
Color globe clear -  
great deal gas came off  
before heating - Connecting  
platina to Negative side -  
down stairs -

185-

185-

Sept 16 1886

Dried — J. F. M.

Aluminum sheet with  
Center wire - fil slightly  
formed one side clamps  
not cleaned - globe  
cleaned - Connected  
to Negative. Side down  
stairs -

9/16/86 No 185 Box 7  
2- amp - Res - Fills - Lamp G.P.  
107- .67 - 160 - 3183 - 10.86 - 166 - 16 H.R. @ C.P.  
143 - 104 - 137 - 6547 - 5.14 - 403 " 80  
Wire to Negative.  
Blue in globe which soon disappeared,  
Blue on clamps, which increased in size and  
thickly, until a deep blue sphere formed, about  $\frac{1}{8}$   
in diameter - soon settled to a deep blue  
along clamp.  
Minutes lasted 10 - over

and

186 -

J. F. 20

fil of bamboo soaked  
 Tar - clamps clean  
 fil not shiny globe dia

9/16/86	11/2/86	Box 7
W - amp - Res - Fills - Lamp	0.12	0.12
101 - 92 - 109 - 4114 - 8.02 - 128 "	11.2	11.2 @ 0.12
132 - 135 - 97 - 7884 - 4.18 - 335 "	80	
net - 30		
up - 20		
80 - 80		
Minutes lasted 50.		
Know in!		

187-

Dried quickly - J. T. H.

Copper clamp nickel plated  
by Hamilton not well washed  
great deal on when clamp  
got hot - some nickel  
volatilized - probably Cu  
melted green color on neck  
Lamp - clamps not very  
shiny fil little browned  
one side globe clear -

9/18/86 No 187 Box 3

V-amp - Res - Filts - Lamp C.P.  
H.P. H.P. @ C.P.

108 - 73 - 142 - 3632 - 9.09 - 146 - 16

144 - 1.14 - 127 - 5804 - 5.69 - 455 - 80

globe black -  
fil black

set 40  
up - air  
80 - 78

Carbon loose in clamp.

Minutes latched 225

188 - not dried J.F. Ott

small glass tube of  
Potassium heated after  
vac obtained, fil shiny  
Clamps clean globe  
quite yellow on one side -  
metal on neck glass -

No 188	Box 5
V - amp - Res - 11 lbs - lamp	C.P.
112 - .75 - 149 - 3712 - 8.90 - 142 " 16	H.R. - H.R. @ C.P.
147 - 1.07 - 137 - 6959 - 4.74 - 579 " 80	
set 40	
up ant	
80 - 89	

Minutes last set 45.

Accidentally cracked & exploded  
gal block -

189 - Not dried J. S. 188

Small piece of Palatium  
got vac' - heated only  
gently not enough to  
volatilize it - clamp  
clean - globe clean  
filshing

9/17/86	112 189	Box 7
v - amp - Res - Filter -	Clamp	C.P.
	H.P.	H.P.
110 - .75 - 149 - 3650 - 9.04 - 145 - 16		@ C.P.
149 - 1.12 - 135 - 7317 - 4.51 - 361 - 80		

at

up -

80 -

Blue on clamp - Resistor on up.

Prod in 5 minutes.



7/17/80 No 190 Box 7  
 N - amp - Res - Filts - Lamp C.P.  
 102 - 110 - 93 - 4964 - 6.65 - 106 " 16  
 128 - 1.46 - 88 - 8268 - 3.87 - 300 " 80  
 act. 30  
 up - min  
 50 - 80

Minute lasted 40

globe whitish & clean  
 fil beautiful shine  
 broke in certain spot & shing  
 clear up to break.  
 end of fil clamp piece black  
 clamp unchanged

190 - Undried - J. S. 1900

Small tube Patassum not  
 blotted - had prob-6C, same  
 Benzene - got 1/2 vac  
 say 22 inches Mercury  
 Sealed off then heated  
 Patassum - with Kerosen  
 white cloud of Monoxide  
 probably then formed -  
 heated it strongly then  
 brought up lamp. suddenly  
 it went up in Cp greatly  
 can't say I can't find  
 it was deposited on  
 fil most shiny has seen  
 filings black globe  
 slightly opalescent -  
 1 - 13

191

undried - J. S. M.

25 milligram Naphthalin  
in side tube - notice it  
deposits at yellow white  
by natural Evaporation  
Naphthalin without heat  
elegant deposit & come  
off slow - if too quick  
makes yellow deposit -  
globe somewhat opalescent  
clay not clean -  
ful very shiny -

192-

Undried

Regular Lamp - J. S. 188

Tried Experiment of putting condenser

& Wipac with & without resistance & magnet  
across lamp & in series around  
magnet to effect the carrying & the  
had no effect perceptible

got good vac reversed current, then  
broke vac & reexhausted 2nd time very  
small amount gas came off reversed  
current got both clamps red hot,  
then broke vacuum slightly say to 27  
inches & reexhausted, no air at all  
came off this time allowed to run  $\frac{1}{2}$  hour  
to get high vac without heating sealed off  
heated globe at time for  $\frac{1}{2}$  minute with  
Kew lamp - fil. not so shiny as  
came from Cartridge lamp. clamps  
shiny globe clear -

193- Dried -

J. S. Allen

Washed with Nitric acid dilute  
rinsed then water put in with few  
drops Silver plating solution -  
silvered clamps Then well rinsed  
put on drier - got vac reversed.  
Current worked high & melted  
clamps heated bulb with  
Kerosene Lamp - the broke vac to  
say 27 inches re-exhausted  
ran lamp up & got no air.  
then let it run for 1/2 hour -  
silver all went off clamps to  
globe - fil. shiny

194 - undrind J. S. 1886

got vac - increased & got both  
clamps red hat got high  
vac then broke vac to 27  
inches; reexhausted & left it  
run  $\frac{1}{2}$  hour after got solid  
like heated & softened  
steam 60 minutes before

Sealing - clamps  
clean globe clean  
fit shiny -

195--

Same as 194 -  
ful not fully shing -

196-

J. S. O. H.

Same as 193- except  
vac broke & little tube of  
Chl Carbon put in - fil then  
brot to 16 Cp and allowed  
to burn until chl all gone  
& blue came on running  
high - little whitening &  
redicence in neck clamps  
Clean - fil not deposited  
in or at least not more  
thiny than from furnace

197  
Same as 193

J. S. 100

except on breaking vac  
some phos anhy wet or  
viscous got in bub -  
put some tube Chl Carbon  
in & worked as with 196 -  
great amount whitening -  
nick clamps fairly clean  
other part globe clear - fl  
not deposited on in fact  
one side slightly browned -



198-

not dried

J. S. 666

Got Vac brake it little phos  
anby got in g'ole - re exhausted  
lamp worked poorly all  
way through -  
Amount - Clamps clean  
fil not very shiny -

.199 - not done ~~199~~

Put on 3 minute pump with  
side U tube containing glass  
anhydrous glass & a cup for  
heating things, - in cup  
put chl. Chromi. ter -  
got vac removed & got clamps  
red hot, then let in chlormi -  
got vac heated then let  
Chlormi - again - got vac &  
sealed off - clamps clean  
filshiny globe clean -  
Vac good -

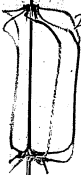
200.

unwashed

Sept 22 1886 -

J. S. Hb.

Put on regular pump with  
 stop-cock U tube containing  
 Phos anhyd & bulb containing  
 Pentachloride phosphorus  
 got vac on all then shut  
 off Pentachloride —  
 the tube badly blocked  
 got vac reversed cannot  
 heated both clamps  
 red hot & got them clean  
 then turned cock & let  
 in pentachloride this  
 broke vac to say  $28\frac{1}{2}$  inches it  
 got vac again quickly as it was  
 probably absorbed by pentachloride  
 The pentachloride & blockers  
 Copper - got good vac so what  
 off - fill out shiny - clamps  
 block globe clean fall  
 deposit - This lamp had pentachloride on globe  
 when first worked 201 had none -



201

J. S. 1885

Same as 200

Except no penula in  
globe when first started  
except perhaps little  
that was in pump -  
clamps one dirty other  
somewhat clean fil  
shiny globe no deposit  
of any kind —

200

v- amp- Res- 7 lbs- <sup>lamp C.P.</sup> <sup>W.R.-H.H. @ C.P.</sup>

104 - .72 - 145 - 8820 - 9.94 - 154" 16

136 - 1.06 - 129 - 6400 - 5.15 - 412" 80

201

102 - .72 - 142 - 3250 - 10.13 - 162" 16

131 - 1.03 - 128 - 5975 - 6.52 - 442" 80

202.

107 - .75 - 143 - 3585 - 9.25 - 148" 16

137 - 1.08 - 127 - 6550 - 5.04 - 403" 80

203

135 - .82 - 165 - 4900 - 6.73 - 108" 16

and on Photometer.

204

103 - .75 - 138 - 3425 - 9.64 - 154" 16

133 - 1.10 - 121 - 6475 - 5.10 - 408" 80

202

undried J.F. 11/10

10 microns

Strongly ignited Caustic  
Petash - clamps cleanblue hangs persistently  
Can't get off - vac notvery high - the fil  
~~has spot in it~~

shiny - globe clean -

Had a spot in it,

203 -

Same as 202 -

had no  
~~as~~ spat in it -

1

Sept 22 1888

204

Undrilled -

Same as 201 - one clamp  
dark -

205 —

J. F. O. H.

Undrilled —

Strong fused Canotic Polish  
25 milligram; run on  
pump for  $\frac{1}{2}$  hour with  
Knoesen then for  $\frac{1}{2}$   
hour after good vac  
then brot it up quickly  
to 100 Cp' — very little  
blue & strange to say  
scarcely any air came  
out & no carrying to  
clean clamps even at  
100 Cp' — clamps undr  
took it off quickly after run  
up fil shiny — KO. St. x T.  
glass — funny lamp



206

J. C. Little

Same as 205 -

Except some blue &  
also halo which partly  
cleared one clamp  
didn't reverse either  
on 205 - or this if I had  
~~not~~ one clamp dirty  
other not very clean -  
worked it like 206 -

Kerosene was in this  
Lamp -

207-

Sept 24 1886-

undried - J. S. Otto

Put in on pump with U tube  
 containing tube of Chl Silica  
 Cut off the Chl Si just vac  
 & then let in Chl Si again -  
 run it up quickly showed  
 high carbon  
 vapor, showing probably deposit  
 Silicon - clamps  
 Clean - globe slightly  
 tinted in neck -

208 - undrind  
J. S. M.

fused KO in globe  
almost impossible in  
fact impossible work  
blue halo off, clamp  
great tendency melt,  
fil browned one side  
Clampx clean  
globe clean

209.

Sumas 208

210 —

July 5th

U tube with Cyande  
Solur - got vac. heated  
Cy + let it in  
then lighted. Carbon  
when about 25-inch  
Hg - deposit of Carbon  
globe darkened & also  
whitened - clamps  
block -

211

Undried — J.S.H.

20 mg Goddard Pal asson in  
globe, works well —  
clamps clean —  
globe clean fit very  
shiny —

212

Same as 211

213

Same as 211 —



214 -

Under  
J. F. 1915

Reg lamp left on  
pump about 2 hours  
before putting Aunt  
on then on about how  
could bring it up to  
about 80 before Halo  
appeared - cleaned  
clamps - very little air  
came off when clamp  
got hot - sealed off  
not very good vac  
fil thing globe clear  
clamps clean

Sept 26 1886

Memorandum -

J. S. Ott

Tried  
not very  
good  
Put flat platinum inside of filament &  
soak in syrupy chloride platinum, or  
Double chl of Pt and ammonia. heat & see if  
locks together (C) metallic pt deposited.  
also immerse the joints in syrupy  
solution of chl plat & pass current to bring  
joint to red heat or use arc decompose the  
PtCl - also try Hg amalgam & Cu also Pt  
amalgam. -

Put bamboo filament in sealed tube  
along with phos anhyd & chloride Carbon  
in coal end also some Copper dust to  
absorb the Cl. then treat to red heat  
protect eyes - do it slowly try different  
things in tube try filament with  $PO_5$  -  
also in coal part also with nothing also  
ascertain what temperature great change  
takes place - carbon - use sand bath &  
thermometer try Sodium to absorb  $H_2O$   
instead  $PO_5$  -

Put  $PO_5$  - Chl Carbon Copper dust & fil  
bamboo & get vac then carbonize  
heat - also fil with CCl only

Memo — Sept 26 1886 J. S. Ott

Paint a plated joint with syrupy  
PtCl then get vac — (heat the Cu joint in  
flame before putting on PtCl) then  
bring fil up so clamp heated + PtCl  
decomposed — also make a plat  
socket break shank of carbon + insert  
tight fit then work syrupy chl Pt in  
+ decompose by needle point flame or  
air.

See if by long running a lamp can be worked  
up to 100 Cp without cleaning clamps.

Use spark gauge with carbon electrodes  
at low pressure (10) point where greatest  
volume spark-spark must not touch  
sides glass. — see if carbon deposited  
also try in gasoline gas to deposit  
with spark. Try two carbon electrodes  
side by side in gasoline + use jump

Spark — Try licorice + sugar on plat  
to shank + put whole in Maquena so  
it won't melt, — make 12 plat caps  
by flattening + spiraling and fit wire break  
shanks off carbon insert + plate  
with Cu gold life —

Memo Sept 26 1886

J. F. Ott

Nitrocellulose the surface of reg fibres  
immense in Ether alcohol Salutar dry  
& then reduce by Sulphhydrate ammonia  
also cut filo out of Nitrocellulose  
paper - immense in Ether alcohol Sal  
dry reduce to Cellulose by Sulphhydrate  
ammonia - try stannite sodium

see if can get solvent for charcoal  
looking residues from the Oil Co  
relate. see if so others - make

some Caramel Carbonize a fil in  
hot sugar treat sugar with  
slaked lime then boil down hard  
& see if it Carbonizes without melt

Soak some paper (smooth) in sugar for  
2 days also caramel also starch  
dry & cut same filaments get life -  
Draw fibres through die hot see  
amount lengthening & shrinking

215. undried J.F. 1886

Gasolene in U annex tube -  
got vac - let in gas got  
Vac let in gas & put  
lamp at  $\frac{1}{2}$  candle power  
as vac increased went up  
to 2 cp - after good  
Vac run up very high  
Clamp sort of melted  
didn't re-use - hole strong  
Couldnt get rid of it  
globe slightly whitened  
fil shiny but guess very  
little deposit. Clamp that  
was heated black - other  
unchanged - slight green  
on narrow neck due to Cu -  
Valabilized without being oxidized.

216 - undried - J. S. 11/16

Put on 8 foot tube with  
U in Ice water to get rid  
Hg - Spectroscope showed  
very little Hg - fil slightly  
brownish clamps + globe  
Clean

217 - undried - J. S. L. H.

Put on U annex with gasoline  
got vac several times & let  
gasoline in after each burning  
Lamp at  $\frac{1}{2}$  c.p. - finally  
got vac good run her up -  
let it burn 20 mins -  
noticed Carbon browned  
broke vac slightly & run up  
high depositing in Carbon  
which is very oking - got good  
vac sealed off - globe  
very slightly white with  
tint brown - clamps clean.

218

J. S. 10/15

Same as 216 - but  
there was strong Hg  
in spectrocope - didn't  
reverse outside fil  
browned, - clamps clean  
globe ditto.



219

undressell -  
J. F. H.

Put in on vac pump let it  
run for  $\frac{1}{2}$  hour after getting  
solid tube. Got it up very  
slowly. Taking care not  
to clean clamps reversed  
current at last let  
it burn for hour after  
wkq are all out at 80  
Cp - fil browned one side.  
Tube darkened slightly  
in spots matted carrying  
This is seen in lamps &  
sometimes, it is due probably  
to high Vac - clamps  
finally got cleaned  
when it was at 80

220 - ~~in fund~~ - 15.11.11

20 feet tubing in 9 ce water  
8 feet from pump - fil burned  
long while at 30 cp when  
spectroscope showed faint H $\gamma$   
could put whole 150 volts  
on without melting clamp  
Change clean fil little  
off color globe clean -

221 - unmarked

Reg lamp got vac worked  
clamps clean let in ACP  
then reexhausted heated  
got vac then let ~~ACP~~ in  
again got clean tube  
heated then sealed off

222 -

Lamp healed keys  
good vac didnt put  
current on. sealed  
of ~~didn't run down~~

**Lamp Factory Notebook, N-86-07-07**

This notebook covers the period July-September 1886. All of the entries are by Edison. The name of John F. Ott appears frequently as a witness. The book contains notes, drawings, and calculations relating to lamp experiments. The lamps are numbered 21 through 158. Loose pages containing the results of lamp tests have been pasted onto many of the notebook pages. The spine is labeled "29." The pages are unnumbered. Approximately 250 pages have been used.

No 21 July 7 1886 Tar J. 5th

Regular unmasked lamp  
put on water jacket pump  
This lamp was not dried, ~~the~~  
immense quantities water given  
off so it gave CO every time we  
heated filament, No mercury  
shown in small spectroscopy.  
but exceedingly strong CO in  
hals - no blue in globe or if any  
very faint - could not get a  
vacuum - burned it for while  
had to take it off - put on  
a cleaned & dried lamp -  
The filament of lamp taken off  
badly blocked.

No 22 July 7 1886 Tag J. S. 200

Washed & dried Regular -  
poured gasoline in & then  
put on Regular pump -  
lighted filament & ran it almost  
instantly to 50 candles before  
tube was quite solid - large  
amount of air came out  
probably H from decomposition of  
the gasoline -

Even after burning for an hour very  
fine fine heads of air come off -  
sealed it off although microscopic air  
bubbles came off -  
globe tinted, Carbon browned on one  
side after 24 hours film  
Vibrates  $\frac{1}{4}$  inch & takes to rest  
in 45 seconds -

NO 23 - July 7 1886 828  
J. 500

Dried & cleaned Regular  
Martin Clean & Pump -  
put it on Jacketed pump  
to take place of NO 21 -  
filament oxidized & locked  
badly showing water - The  
Chloride Calcium used for a  
drier in this pump shows no  
signs of water. It's probably  
no good and phos anhydride  
is requisite,



1024 - July 7 1886 709  
J. 5.000

Washed & dried Regular -  
put thumbful of carbonate  
Potassium in globe. got vacuum  
heated  $K_2CO_3$  an. gave off  
lots gas, heated filament  
globe very blue with mercury  
so strong turned scarcely see  
 $CO_2$  with little spectrocope,  
stopped heating  $K_2CO_3$  when  
it ceases giving off gas  
got solid tube, burned lamp  
quite high 80 cp for 10 or  
15 min. Reversed Current  
Clamps clean - Shine very  
strange to say don't seem to be  
taken off - No blue in clamps  
globe clear - after 24 hours  
filament ~~is~~ comes to rest  
in about 4 seconds Seal

J. S. G. July 7 1886 708

25 - Washed & dried Regular  
put on Regular pump got vacuum  
broke it & took off Lamp - then  
took smaller tube & put phos anhydride  
down through it to bottom of lamp  
a very little got on side globe -  
heated globe to make it stick to  
bottom, then put it on regular  
pump - heated this with Kerosene  
for several mins gently got  
solder tube & broke it from time to  
time instantly pulling plug  
run it for 20 mins with solder tube  
no Kerosene or current then put  
on current & broke tube, very  
little air comes out each time,  
allowed it run for 20 mins no current  
then couldn't break it - Reversed  
current, let it burn 10 mins at  
50 cp - Couldn't break tube let it  
run for 10 minutes, Hy blue went  
away lamp became white no halo  
clamps dirty - Shine not affected  
slight brown that near clamps in a spot  
which was clean - over

after 24 hours filament vibrates  $3/8$   
of inch & continues for one minute.

Cracked

26 - J. F. Roth July 7 1886 TAE

Washed & dried Regular

put tube down & forced small  
quantity size pea phos anhydride  
to bottom a little stuck inside  
globe; then heated globe make  
Phos Anhy stick to bottom of  
Lamp - put it in water jacket  
pump; This pump had some  
Phos Anhy put over the 'chloride  
Calcium' - heating lamp  
gently with Kerosene; Keep it  
exhausting while so heated. brought  
Carbon to dull red for  $1/2$  min -  
Keep 1st peg in on 2nd current for 10  
min - then heating for  $1/2$  hour with  
Kerosene with sealed tube to give plenty  
change for Phos Anhy in globe to  
absorb the water vapor - The small piece  
of phos anhy dropped down partly on  
side globe partly in full tube where

9.5.00.  
it became viscid - probably some  
Volatilized & then brought lamp  
up quickly to 16 Candles &  
disconnected. Considerable air  
came off - then heated it to  
50 Cp - considerable air came  
out. The globe is very blue  
from Mercury Vapor where did  
it come from - Can't get rid  
of Hg blue in globe - its very strong.  
Can't break tube, allowed it burn  
10 mins at 50 Cp sealed off -  
globe slightly tinted filament  
browned both sides - slight  
Volatilization Phos only in bottom  
globe. Clamp dirty, -  
after 24 hours filament vibrates  
& comes to rest in one second -

Seal Cracked

No 27.

J. S. 1886

Washed and dried Regular

$\frac{3}{4}$  hour in drier - Then with Carter tube  
put  $\frac{1}{2}$  thumbful phos anhydride  
at bottom of lamp none touched  
sides, just little bit got on inside part  
between clamps - put in long fibre &  
got most of it off - heated lamp  
in kerosene to soften & stick phos  
anhydride to glass so it would not  
drop down - put it on a Regular  
pump with Kerosene Lamp  
under bulb - It got a solid tube  
very quick - on first current I  
put 1st plugs in which is 4 @ 5 -  
plugs less than red & keep pump  
going with solid tube this current  
& Kerosene for  $\frac{1}{2}$  hour - put it on  
2<sup>nd</sup> peg at 3.26 pm - It didn't break  
tube but there are small pin heads coming  
down all the time but few in number  
after running gradually to 4th peg  
& dull red ran it up quickly

J. S. 006  
to high cp great deal gas came  
off but inside minute it all went  
+ couldnt break tube even by reversal,  
guess this was true air + not water,  
shine all right - globe very blue  
no halo - lamp clean - filament  
much bent, clamps not clean  
phos archy struck to bottom none  
went on side — after 24 hours  
filament vibrates  $\frac{1}{16}$  + came to rest  
inside of 2 seconds Seal Cracked

<sup>J. S. Little</sup>  
General Experiments - July 10 1886

Taf

Carbonate + Bi-Carbonate dry ground  
up with pyrogallic acid absorb  $O_2$  &  $O_2$   
from the air use this in pump—  
Carbonate is better than Bi-Carb—

Phos Anhydride can be kept +  
moulded in any shape under  
gasoline + of course almost  
any HydroCarbon—

Tested cleaned lamps after  
going through washing with  
Bichromate of Potash +  $SO_4$   
+ distilled water - faint  
traces  $SO_4$  with the Barium  
but second boiling + washing  
with distilled  $H_2O$  got rid  
of it entirely =

July 10 1886

708

J. F. Ott

Mercury is attacked by Sulphuret  
of Potassium - perhaps it won't be  
dry - Can use this substance  
in pump to absorb Hg Vapors.



Aug 21 1886 Tag 9.00  
28 - started 1150.  $2\frac{1}{2}$  lb Hg pump  
Slowest pump yet. Lamp washed  
by Martin on 12 of Aug land until  
today 21 Aug. with Corkin had  
previously been washed in Bichon T 504  
rinsed regular way - 3 put ~~the~~  
Phos Anky in Exhaust tube & made  
regular contraction both sides of  
it. - Heated lamp while exchange  
by Kerosene - Lamp - Took it off  
at 3 o'clock worked it up very  
slowly - then burned it for about  
hour at 80 cp - quite blue in  
globe, ~~but~~ didn't reverse - globe  
one side somewhat browned  
other side very shining lamp  
inside that is browned is dulled  
other pretty clean - globe  
considerably tinted in irregular  
blotches.

8/21/86 / No 28.  
 V- amp - Res - Fills - Lamp - C.P. @ C.O.  
 102 - .85 - 120 - 3849 - P.67 - 137 " 16  
 134 - 1.22 - 109 - 7211 - 4.85 - 866 " 80  
 act - 40 76 180 312  
 of - min - min - min - min  
 70 - 78 - 72 - 62 - 50  
 Minerals' tested 600

Bulb very block one  
 Clamp block  
 Vacuum good

Aug 21 Tried running lamp  
 off on vacuum Regular then breaking  
 vacuum & testing sides of globe  
 for transparent film - didn't get  
 any - put another lamp on  
 run off regular but burned it  
 for about 40 minutes at 80 c  
 got blackening in blotches. This  
 came off in film quickly  
 with HCl - Couldnt dissolve it  
 with HCl + Nitric acid together or  
 in addition of  $\text{SO}_3$  - on heating.  
 Either there was a very transparent  
 film in first lamp that couldnt  
 be seen which was silica from the  
 ash or the film is a compound  
 formed by  $\text{H}_2\text{O}$  & the Carbon  
 which compound is not thus attacked.

Aug 21 1886 - J. F. M.  
No 30

Put solution of permanganate  
of potash in globe & evaporated  
water leaving a film. run it  
regular & then allowed it stay  
on pump hour at 80 C p about  
globe blackened in very  
conspicuous blotches. certain  
places show absolutely no  
blackening - No Curve

8/23/86/ 11<sup>0</sup> 30.

V	amp.	Res	Fills	amps	C.P.
98	80	122	8437	9.57	138 " 16
129	112	110	10371	5.78	414 " 20

set to  
25 - min  
20 - 68.

Acid in 25 min.

J. S. M.

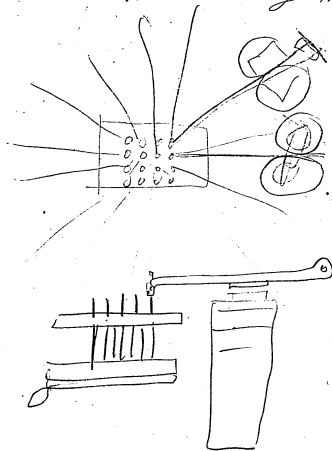
29- Slow pump - phos only  
 in tube & bulb - got vac  
 then heated it quick got  
 all air came out & then  
 power stopd got good vac  
 & sealed off - heated one  
 side partially by  
 Kerosene Lamp -

8/23/86		No. 29		amps		C.P.	
V	Amp	Res	Fills	150	150 @ C.P.		
113	.11	159	5451	9.57	153	"	16
142	1.03	140	6372	5.01	401	"	80

act-  
 up  
 7  
 80.

Acid in 20 minutes

J. S. Otto  
Aug 24. 86



T' THIS IS THE

8/29/01 11:00  
 v. amp - 100 - 135 - 187 - 210 - 250 - 280 - 300 - 320 - 350 - 380 - 400 - 420 - 450 - 480 - 500 - 520 - 550 - 580 - 600 - 620 - 650 - 680 - 700 - 720 - 750 - 780 - 800 - 820 - 850 - 880 - 900 - 920 - 950 - 980 - 1000  
 104 - 105 - 135 - 187 - 210 - 250 - 280 - 300 - 320 - 350 - 380 - 400 - 420 - 450 - 480 - 500 - 520 - 550 - 580 - 600 - 620 - 650 - 680 - 700 - 720 - 750 - 780 - 800 - 820 - 850 - 880 - 900 - 920 - 950 - 980 - 1000  
 104 - 105 - 135 - 187 - 210 - 250 - 280 - 300 - 320 - 350 - 380 - 400 - 420 - 450 - 480 - 500 - 520 - 550 - 580 - 600 - 620 - 650 - 680 - 700 - 720 - 750 - 780 - 800 - 820 - 850 - 880 - 900 - 920 - 950 - 980 - 1000

Murphy - 620

22 Aug 1886

### 31 Solution of Pyrophosphate

Soda - washed in regular way. with Bichrom K & SO<sub>3</sub> common & distilled water then the distilled water containing the Pyrophosphate - a little solution touch Carbon & clamps dried on drier -

13½ pump - filament slightly browned both side having reversed current. globe slightly tinted more near clamps - one clamp nearly melted - J. F. M.

globe not so very black for the life - rather less than average - clamps clear

NO 32 -

Same as 31 Except used  
solution of Nitrate ammonia -  
Clamp melted - try  
another - J. S. 1886

8/23/96	No 33					
1st	2nd	3rd	4th	5th	6th	7th
184	73	142	3362	282	157	16
137	103	133	6238	529	423	50
201	40	50	180	250	430	745
14	mm	mm	mm	mm	mm	mm
80	66	62	53	50	44	46
752	1253	1925	1575	1115		
39	mm	mm	mm	mm		
39	32	30	30	29		
Mum's last lid 2005						

globe brownish black  
Clamps clean

33 -

J. F. 188

Same as 31 - except

Solution Chloride Copper -

Very slightly blackened - globe  
at first white afterwards got quite  
blue - probably Chloride decomposed  
bulb clear except slight Coppery  
faint deposit down by clamps.  
Clamps clean but dull -



8/20/61 11<sup>45</sup> 34

5-amp	R <sub>1</sub>	7000	lamp	H.P.	Q.P.
102	52	141	3230	10.21	163 " 16
132	105	125	6149	0.37	430 " 80

act.	40	PU	150	250
up	min	min	min	min
70	78	62	52	44

Mum is lasted 825-

34 - Same<sup>as 31</sup> except Sesqui-  
 Chloride Chromium with  
 little proto chl Chromium  
 = Sesqui dont seem dissolve  
 but fine powder - Lamp bulb  
 good vac filament <sup>slightly</sup> browned  
 on one side - reversed  
 Current. Clamps clean but  
 dull --  
 Blackened globe - one side  
 filament not dead  
 black - clamps clean

8/23/86/ H<sup>2</sup> 35-  
 v-amp-Res-Tells-clamps 0.0  
 106-72-147-3362-4.2-4.2 @ C.1.  
 13F-101-127-6591-5.01-401-80

At 40 80 130 210 450  
 90-78-68-56-49-59

minutes last 580

35 = Same as 31 <sup>J. 5.00</sup> except  
 perchloride of Antimony in  
 water = solution rather  
 opalescent =  
 clamps clean - filament  
 seems unbrowned either  
 side. globe just shade  
 tinted

globe Ordinary black  
 clamps clean  
 filament dead black

36 - Same as 31 - J. F. 1110

glacial phosphoric acid -  
Solution got on carbon &  
Clamps -

Globe clear filament  
pretty shiny - clamps  
moderately clean  
Nothing else noticeable.

8/25/86/		11.0 36.		Lamps		C.P.	
V - amp	R - Ohms	Filts -	40	40	40	40	40
105 - .73	144	8486	-	9.70	-	105	16
106 - 1.03	129	6526	-	0.22	-	418	80

act.	40	50	100	200
up - min	min	min	min	min
50	74	63	67	40.

Wm. L. Lister 250.

only moderately black  
globe clamps clean

37 - Same as 31. J. F. Ott

Potassium Nitrate -

Solution allowed it to get on  
Carbon & clamps and -  
hard getting it off pumps  
deposit quite large  
on glass - will try a  
weaker solution -

Failed

824/861 17938  
 v- amp- Res- T6- L6- Lamp- C.P.  
 107- 76- 140- 3898- 9.17- 197 " 16  
 140- 112- 125- 6946- 4.75- 380 " 80  
 act 50 60 120 200  
 up- min- min- min- min  
 80- 75- 73- 58- 40  
 Minutes lasted 230

38 same as 31- J. F. Ott

Pyrogallie acid + ~~B~~ carb  
 Balash solution didn't get  
 it on clamps or carbon  
 & ? seemed as  
 much as if it had been  
 running 500 minutes  
 due to action of O on  
 Pyrogallie - filament  
 only slightly if any browned  
 about same color. filament dead  
 black

39 Same as 31 — <sup>20 156</sup> 25 1886. —  
J. S. Ott

Chloride Magnesium  
Strong got it over clamps +  
Cables — The mercury  
pump stopped & Phos any  
flow up into Lamp — stopped  
for the night — let Lamp stay  
on pump — at 9 am 24<sup>th</sup>  
started it up again  
almost impossible get Vac  
Vac even after 2 hours bad  
Phos any all viscous from absorption  
of water probably from Chloride  
magnesium filament  
Browned clamps moderately  
Clear — globe clear except  
white deposit.

8/24/86/

N<sup>o</sup> 89.

v- amp- Res. 7 lbs- lamp 0.2  
 1st- 75- 143- 8583- 4.2- 14.2 @ 0.10  
 2d- 108- 129- 6636- 4.21- 14.7 " 16  
 act  
 up:  
 80

and in 20 minutes

Aug 23 1886

J. F. Ott

40 - Bisulphide Carbon

unwashed Lamp - put  
 it on pump - ~~the~~ pump  
 stopped ~~the~~ phos anhy.  
 jumped into Lamp -  
 let it remain on pump  
 but with air space all  
 night started at 930 on  
 24th -

almost impossible get  
 Vacuum - finally got  
 fair one - one side  
 filament browned -  
 globe little browned in spots  
 phos anhy melted -  
 little spots - Lamp clear  
 not absolutely pure this is Bi Sulphide

globe clear

one clamp block  
other chair -  
filament block -

Try again

110	40						
118	- 75	- 134	- 8494	- 944	- 57	" 16	
123	- 110	- 121	- 6454	- 0.11	- 909	180	
127	- 70						
128	- 110						
129	- 84	- 80					

Wm. L. Davis - 1880

45- unwashed - J.F. Ott

$\frac{1}{2}$  gramme dry oxide of antimony  
almost impossible get  
air out this Lamp -  
probably it decomposes

Clamps clean - very difficult  
preventing them melting  
one side filament browned  
blue hairs Curve Built  
very little blackened filament  
lead block - clamps clean

12/4/86/ N<sup>o</sup> 45-  
 2-amp- Rio- 11th- Lamps O.P.  
 12- .74 - 134 - 3457 - 9.57 - 153" H.P. O.P.  
 133-110 - 121 - 6459 - 5.11 - 489" " 16 " 80  
 set- 57 150 260  
 up- min- min- min-  
 80 - 72 - 67 - 89  
11.1 2.80

*Minutus* Lach. 280.



46 - Unwashed Lamp - J. F. Hts

Amorphous phosphorus -  $\frac{1}{4}$  gram

Seems wet - Amorphous Phos

stands high heat without

Change - Lamp works well  
phos sticks in one place

Clamps very dark - filament  
bright - bulb clean -

8/24/86		No. 46		Lamps		C.P.	
V - amp	Rio - F.Hts	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
97	72	135	3097	10.67	171	"	16
127	100	127	3318	5.87	470	"	80

act. 50  
up - min  
80 - 78

*Myzami*

Munich's lasted 145.

filament only browned - globe  
not black but brown light  
brown

<sup>J. 5. 1916</sup>  
No 50 - Unwashed Lamp -

1/2 gramme dry Toluol head  
Kerosene Lamp used

Toluol head Volatilized  
without lead deposition  
globe very yellow almost  
opaque. Cant see slate  
filament came off

Vac very easy

8/24/86

No 50

V - amp	- Res -	Flts.	Lamps	C.P.
124 - 87 - 143 -	4777 - 6.91 -	111	"	16
149 - 1.14 - 131 -	7521 - 4.39 -	193	"	45

act - 40

sp - min

44 - 40

Thumbnails - last side 70

52 Unwashed lamp J. S. 106

Dry peroxide Barium  $\frac{1}{2}$   
gramme - heated with  
Kerosene - filament OK  
works well on pump -  
~~Excess~~

8/24/86

U.S. 52

V. - amp - Res. Hills Lamp C.P.  
H.P. - H.P. @ C.P.  
110 - 77 - 143 - 3710 - 8.92 - 143. " 16  
144 - 115 - 125 - 7344 - 4.48 - 363 " 80

Set	70	120	390
4h	min	min	min
80	56	48	37

Minutes lasted 575

Scarcely any blackening globe  
Clamps clean filament dead  
black

27 $\frac{1}{2}$  —

J. S. H.

Washed Regular - then

Solution Nitrite Potassium.

(not sure) may be Be Sub Carbon. but  
think not - forgot to Number it.  
element bright - lamp -  
iridescent fringes near clamps  
clamps dirty -

4/24/86 - 14.2 27 $\frac{1}{2}$

Oxidized before reaching  
could be obtained.

Cracked - Seal

8/29/86/  $N=41$   
 v-amp-Res-Fills-Lamps 2.10  
 103-73-141-3318-9.94-159-16.  
 135-105-129-6282-5.25-420-SD  
 act-SD 150 260  
 up-min-min-min  
 80-71-82-88

Mummers lasted 815-

Very little block for the life much  
 below average: fit block

41 - unwashed Lamp <sup>J. F. H.</sup>

Oxide Magnesia  $\frac{1}{2}$   
 green dry

filament slightly brown  
 very difficult get off  
 pump hard keep clamps  
 from melting - very  
 blue Hg clamps  
 very clean  
 globe clean

42 — Unwashed Lamp <sup>J.S.M.</sup>

Hyperoxide Barium

$\frac{1}{4}$  gramme —

Break first one made second  
filament slightly browned

one side very different  
Keep from melting clamp

globe clear

8/24/86 W<sub>2</sub> 42

V.	amp.	Res.	Filts.	Lamp HP	S.P. HP @ C.P.
98.	72	136	3141	1052	168. - 16
128.	101	126	5707	5.78	462. - 80

Set	50	150	260	460	770	940
H	min	min	min	min	min	min
80	76	60	50	42	33	30

Minutes lasted 1075

globe very little blackened  
Clamp clean not so much  
blackened as 51

43 - Unwashed Lamp <sup>J.S.D.</sup>  
Borate of Byrata.

$\frac{1}{4}$  gramme -

globe clear - filament  
bright - very diff. ant  
pneum clamps melting

8/24/86/ W. 43

V- amp. Re- Fills Lamp C.P.  
H.P. H.P. @ C.P.  
99 - .73 - 136 - 3185 - 1036 - 166 - " - 16  
130 - 103 - 126 - 5928 - 557 - 446 - " - 80

Set	50	150	260	460
$\frac{1}{4}$ min	min	min	min	min
80	68	50	38	36

minutes lasted 545

less than ordinary blocking  
of globe clamps clear  
inside filament not dis-  
block -

37 - unwashed lamp <sup>J. S. M.</sup>

Fluoride Calcium

$\frac{1}{4}$  gramme -

flint broken one  
side - clamp clear

globe clear don't work  
well a pump -

8/24/86/ H<sup>2</sup> 51

V - amp - Res - Fths - lamps 9. P  
H. P. - 4.0 @ C.D.

101 - .76 - 133 - 3406 - 9.70 - 155" 16

130 - 1.10 - 118 - 6326 - 5.22 - 418" 80

set 30 130 260 460 770

up - min - min - min - min - min

80 - 76 - 58 - 48 - 45 - 34

Minutes lasted 820

globe only little blackened  
Best yet except the 3100 minute  
lamp. There are spots where there is  
no blackening -



47 Unwashed lamp <sup>J. S. Hb</sup>

arsenate antimony

$\frac{1}{4}$  gram dry

no blue in globe -

interis fall tube -

Clamps dark drab -

bulb slightly tinted near

Clamps filament

bright -

globe only moderately  
black  
clamps clean

8/24/86 1 No 47  
V - amp - Res - Filts - Clamps - C.P.  
109 - 175 - 152. 8628 - 9.09 - 145 " 16  
142 - 109 - 180 - 8257 - 4.84 885 - 80

act - 50 150  
up - min - min  
80 - 78 - 67

Minutes - last test 150

44 - Unwashed Lamp <sup>J. S. Oke</sup>

Oxide Copper -  
hand get off pump.  
Very blue from Hg  
one s. side flint  
slightly blocked

8/24/86. W<sub>2</sub> 44

V. corp.	Res.	Hills	Lamp H.P.	C.P. H.P.	@ C.P.
100-70	-143	-3097	-10.67	-171	" 16
131-100	-131	-5795	-569	-455	" 80

Set	50	150	260
th	min	min	min
86	70	52	41

Minutes lasted 365

globe black perhaps above  
ordinary -

Step 86 48 48

V. amp. - Res. - Fills Lamp C.P. H.P. @ C.P.

101.	-74-	136-	3318-	994-	159-	-16
130.	-105-	114-	6061-	5.45-	436-	-80

Set	20	150	250	350	660	880	980
off	min	min	min	min	min	min	min
80	73	60	52	44	34	34	30

Minutes lasted 1160.

globe very black  
fil. black - clamp  
Clear -

488 - Unwashed Lamp <sup>J. F. 11/16</sup>

Sesquioxide of Iron  
Enormous amount of gas  
Comes off when heated by  
Kerosene Lamp -  
Clear globe - clamps  
Clear - although  
burned high for 1/2 hour  
both sides filament  
phasing -

24/86/63 1/10 63  
 10 - amp - 120 - 711 - 100's C.D.  
 96 - 70 - 137 - 244 - 11.13 - 178 - 16  
 125 - 116 - 118 - 584 - 5.61 - 949 - 80  
 ref 20 - 150 - 180 - 350 - 680 - 1830  
 19 - 72 - 40 - 36 - 32 - 22 - 24  
 950 - 1220 - 1200 - 1200  
 19 - 16  
 Munitio lasted - 1475

Black globe changes good  
 Clean filament has  
 black -

63 - Unwashed Lamp <sup>J. F. 870</sup>

Ferricyanide Potassium  
 $\frac{1}{4}$  gram

filament badly distorted  
 little hard to get off  
 pump globe slightly  
 tinted one side  
 filament ~~tinted~~  
 or browned -

49 - Unwashed Lamp <sup>J. F. Ott</sup>

Chloride Ammonium

Dances & volatilizes in  
Lamp with Kerosene Lamp  
but doesn't hurt vacuum  
in least

filament dead black  
too much frosted  
no good

8/24/86/ PE 49

v	amp	-	Res	-	Watts	-	Lamps	-	C.P.
117	.74	-	158	-	3849	-	8.57	-	157 " 16
149	112	-	133	-	6358	-	5.16	-	361 " 70

set  
up - 20  
min  
70 - 7

Thumbnails lasted 60

8/24/86 No 54  
 v- amp- Res- Fills- Lamps C.P.  
 97- 78- 124- 336 2- 982- 157- 16  
 127- 111- 115- 6238- 629- 423- 80  
 ref- 20 30 140 260 370 740 591  
 ref- min- min- min- min- min- min- min-  
 80- 80- 72- 64- 58- 48- 45- 44

Munich lasted 1060

64- Unwashed Lamp  
 Iodide Polonium - J.F. 10/10

Clamps clean- of Salt  
 heated well by Kuoan  
 Lamp work off easy  
 bulb clear filament

Shinning

This Lamp is returned as  
 54- Thue Gang two 54-  
 but think it is 64-

Not a bit of blocking

There is a light brownish  
 coloration like the 52 hour 80Cp  
 Lamp filament block- clamps  
 Nicodurally clean-

This is on right track & probably  
 due to free Iodine given off  
 when K9 heated-

62 - Unwashed Lamp <sup>2 Feb</sup>

Permanganate Potassium

arcd - several arcs  
formed in Lamp

before one jumped

No Cause

Busted

61 - Unwashed Lamp

Sulphur Calcium  
globe clear - works well  
on pump filament  
slightly browned  
clamps block

8/24/86

No 61

V - amp - R - Filts - lamps - C.D.  
H.P. - H.A. @ O.R.

103 - 73 - 141 - 3318 - 9.94 - 159. 16.

134 - 106 - 126 - 6282 - 5125 - 420 " PD

act -

20

up - min - min

80 - 84 - 72

Wm's label 120

globe lightly blackened  
clamps block - filament block



60 — <sup>J.F. 11th</sup> unwashed lamp

Cyanide Copper

globe browned

Considerably hard

to get off — spot in

it — filament

browned one side

clamps clean

8/24/86/ A.O. 60.

15 — amp — Res — Filts — lamps C.D.

105, 73 — 144 — 3406 — 9.70 — 103 " 16

137 — 105 — 130 — 6371 — 5.18 — 414 " 80

act 20 30  
up — min — min  
80 — 72 — 58

No Clock only  
yellow — one side  
filament moderately shining

Mummers lasted 50

59 - Unwashed Lamp  
J. F. M.

Oxalate Copper -  
film + browned  
slightly on side  
barrel high for  $\frac{3}{4}$  hour  
globe clear - one clamp  
yellow like gold  
other not very clear

8/24/86/ No 59

	amp	res	filts	lamps	C.P.
100	79	127	3495	4.44	157 " 16
130	112	116	6459	5.11	409 " 80

20 50 80  
up - min - min - min  
80 - 72 - 66 - 58

and in 12.5 minutes.

57- Unwashed <sup>J. S. 11/16</sup> Lamps

Tartrate Antimony  
Impossible get vac  
after 2 hours.  
and

OK

Prusted

<sup>J. S. D.</sup>  
36 - Unwashed Lamp

Litterage

globe clear - filament  
OK - had take it  
off pumps rather  
quick power stop.  
Change clear -

8/25/86/ 11-0 56  
Rs. Filts - lamp G.P.  
amp. 140 - 3495 - 9.44 - 151 @ 16  
105 - 75 - 129 - 6326 - 5.22 - 98 " 80  
136 - 1.05 - 129 - 6326 - 5.22 - 98 " 80

set 20 40 60 120  
up - min - min - min - min  
PO - 74 - 66 - 62 - 48

Moderately  
black globe

Thumbe lasted 140

53 Anewash Lamp <sup>J. S. 116</sup>

Acetate Alumina

yellow residue - globe

clean clamps ditto

filament browned

both sides - distorted

8/24/861 No. 53

V-amp	Rio	Flts	amps	C.P.
111	.70	154	3457	9.57 - 158 " 16
144	1.04	141	6769	9.88 - 390 " 80

act  
up -  
PV

arc'd in 10 minutes.

arc'd

8/24/86/ 11.0 58

V - amp - Res - Fllts - lamps - C.P. @ C.12  
101 - 70 - 144 - 3141 - 10.52 - 162" 16  
130 - 1.00 - 130 - 5737 - 5.74 - 452" 80

act -  
up - 20 min - 30 min - 140 min  
80 - 40 - 38 - 30.

At 50 min. deep, close blue on + clamp  
Arc'd in 185 min.

58- Unwashed Lamp

Chlorate of Potash  
globe clean one clamp  
black other not clean

Chlorate Melted -

Came off hard -

slight brown on globe  
near clamps

one side filament  
browned near clamp

53 - <sup>J.F. Mo</sup> Unwashed lamp

Arsenide Cadmium

too much in globe

blackened absolutely  
opaque - neg

Printed

82 - Unmarked

Cinnabar - arc

Pasted



70

Unwashed Lamp

Mercuric oxide

arcd on pump

54 - Unwashed Lamp  
J. F. 1886

Metallic Tin - powder  
white Salitine matter  
comes off - very little -  
air comes off - globe  
white except at base  
incandescent then little  
blue only works splendidly  
on pump filament  
bright both sides  
Cabin perfectly strong etc.

8/25/86/ No 542  
V - Amp. Res - Fills - C.P. - H.P. - H.P. @ C.P.  
104 - 79 - 132 - 3650 - 9.04 - 145 - " 16  
135 - 113 - 120 - 6750 - 4.89 - 591 - " 10

2nd 40 130 300 450  
up - min - min - min - min  
80 - 72 - 50 - 42 - 37

Mirrored tailed 600.  
pretty black

69- Air Washed Lamp

Nitroprusside Sodium

globe little tinted

filament not perfectly shining  
g. 5.0th

8/25/86/ N<sup>o</sup> 69

V	anip	Ra	Filts	amps	C.P.	C.P.
106	-	.76	-	140	-	3575 - 9.25 - 198 " 16
137	-	110	-	125	-	6675 - 4.94 - 395 " 20

set	40	130
up	min	min
80	80	58

Wires lasted 130

More than reg  
flocking clamps  
clean -

68 - Unim. Led Lamp  
J.F.D.H.

Tungstate Soda

• bla bulb clear Carbon

• shining - comes off easy  
clamps clean -

8/25/86

N<sup>o</sup> 68

V. amp - Res - Title - Amps @ 200 - H.P. - H.P. @ C.P.

100 - 72 - 1.59 - 3190 - 10.35 - 166 - 16

130 - 1.02 - 128 - 88 2/3 - 5.02 - 450 - 80

est 40 130 300 440 690 900 1130

up - min - min - min - min - min - min - min

80 - 72 - 56 - 48 - 42 - 36 - 34 - 32

Mum to tested 1190

Lamp about regular block  
clamps clean  
fil lead block

75 Unwashed Lamp

Lead Chloride <sup>J. F. M.</sup>

Iridescent works well  
on pump very little  
of any Hg blue -

Globe whitened somewhat  
Clamps clean - filament  
apparently shining, both  
sides -

8/25/86. No. 75

2- Amp	Res	7 lbs	Lamps	C.P.
113	.71	159	3550	9.29 - 14.9 " 16
149	1.14	144	6265	4.81 - 385 " 80

set 40 80  
up - min - min.  
R - 74 - 66

Iridescent  
not much  
blinking

Murphy lasted 85 -

81 Unwashed Lamp 2.500  
 Hydrabromate of Ammonia  
 Volatilizes before heated  
 with Kerosene Lamp -  
 Cant do anything with  
 it - faint moderate  
 shiny - clings dirty

8/23/86 H<sup>o</sup> 81.

v - amp - Ro - 7 lbs - Lamp - B.P.  
 98 - 74 - 133 - 32.25 - 1023 - 164 - 16  
 125 - 103 - 125 - 5900 - 5.55 - 444 - 80

set 40 100  
 up - min - min.  
 80 - 56 - 50

Minich's lasted 120.

74 - Unwashed lamp

Carbonate Lead

almost impossible get  
Vac lamp clear -  
Champs clear filament  
blocks -

8/25/86 11<sup>00</sup>, 74.

V. amp. Res. Fills. Lamp C.O.  
H.P. - H.P. @ C.O.  
128 - 63 - 203 - 3375 - 928 - 148 - 16  
149 - 78 - 192 - 5130 - 641 - 208 - 40

Set 40 130 340 450  
up - min - min - min - min  
40 - 44 - 46 - 40 - 36.

Munich tested 540.

less black than ordinary  
white in spots - clear  
clear J.F.O.H.

67- Unfinished Lamp J.F. Ott

Arsenias Patosh -

bulb tinted - flint

block - ~~was~~ blocked

yet while on pump  
hard to get off

8/25/86. No 67

v- amp- Res- 7 lbs. lamp C.P.  
107- .78 - 138-3700- 8.92-145 " 16  
138- 114 - 121- 6970 - 4.73 - 378 " 80

set 40. 180  
up - min - min  
80 - 82 - 86

Mounts lasted 180

Blocked about Regular  
but not dead block



7/26/86 No. 73

V-amp-Rs-7 lbs.	Lamps	C.P.	
100-78-129-5465-	H.D-	H.P.	@ C.P.
180-110-118-6550-	9.50-	105	" 16
	5:20-	416	" 50
225-40	150 300 450	690	950 1150
45- min- min- min- min-		min- min- min-	
80-74-56-52-46-	58-59-58-		
1600	1960	2190	2490
min- min- min-	min- min- min-	2625	3320 3610
91-30-	28-26-	25-28-	21

Number listed 3785-

Pretty black clamps not very clean - The block has a yellowish tinge, think great deal of it due to dirty effect of movement of the loose lamp block. Vae good -

73 Unworked L

J. F. 1886

Lampblock

Comes off easy 8057

Clamps mod clean

filament shining  
globe tinted little probably  
from lampblock little  
yellow in narrow part globe  
probably a Hydrocarbon from  
lampblock

66 —

J. F. 1886

Acetate Lead

No good too much water  
burst on g —

Busted

80

j. s. 11th

Sulphate Ammonia

Too much water in it  
my busted acid

---

-PT

P(25)86.

No 79

V-amp - Res - Fills - Clamps  
 98-50-123-5475-950-152  
 126-114-111-6375-511-414  
 20-60-230-580-620-580-1080-1650  
 20-50-64-52-42-41-34-32

Worn out - last lot 1900

quite black - but dead black  
 Clamps clean

79- Unwashed Lamp  
 Ferrocyanide Potash  
 bulb clean clamps  
 clean - filament very  
 slightly browned lower  
 part one side -  
 browned high for over  $\frac{1}{2}$   
 hour -

globe not nearly as  
 black as it ought to be  
 for this life - filament  
 dead black - Clamps clean  
 J. F. Webb

72

J. F. Old

Bichromate ammonia  
 Bulb clear impossible  
 get rid air - salt  
 swells up enormously  
 & continuously gives off  
 air - ferment  
 dead block - burned &  
 3/4 hour in pump

8/23/86/

No 72

V- amp- Res- Fills - Lamp C.D.  
 H.P. - H.P. C.D.  
 111- 81- 137- 3990- 8.27. 13.2. 16  
 142- 112- 127- 7050- 4.68- 324. 80

2st- 60  
 4st- min  
 80- 80

Lamp ordinary  
 blackened bulb

Minutes lasted 110.

86

J.F. 116

Songy Platinum  
 globe faintly tinted -  
 little browned in narrow  
 part - filament even but  
 not perfectly shining  
 wks easy on pump  
 clamps clean -

4/25/86

11/86

N. amp - Ro - Hills - Lamps C.P.  
 102 - 78 - 131 - 3525 - 9.36 - H.P. - Q.C.P.  
 132 - 112 - 118 - 6550 - 5.04 - 403 - n-80

Set	60	230	380	620	870
4 <sup>th</sup>	min	min	min	min	min
80	77	56	48	38	35

Minutes lasted 1030

globe very black  
 fil. did block  
 clamps clean

unwashed J.F. 11th  
83- Iodine - about 2 millym

whitened near clamps from  
formation inside Cu  
filament shiny globe  
clear wks very easy  
on pump - No blue in  
globe - fall tube not  
stopped but deposit  
takes place -

8/23/86 No 83-

V- amp. Res. Fills. lamps C.P.  
H.P. H.P. @ C.P.  
99. 75 - 132 - 5300 - 14.0 - 160 " 76  
128 - 105 - 122 - 5945 - 5.88 - 444 " 80

set  
90 110 260  
up - min - min - min  
80 - 76 - 71 - 60

globe slightly  
blackened or rather black  
brown - filament black  
clamps clear  
quite white as on clamp

Munich last lot 410

8/23/86

No 78

1 - amp. Res - 7 lbs. - <sup>Lamp 0.2</sup>  
 110 - 50 - 125 - 3550 - 929 - 149 - 86  
 130 - 114 - 114 - 8460 - 512 - 410 - 50

def. 40 110 260 570 760 940  
 up - min - min - min - min - min - min  
 80 - 76 - 64 - 56 - 48 - 40 - 35

Mumukshu - 1325

Globe rather black  
 One clamp clean other  
 Carbon black - fil dead  
 black -

78

J. 5. 86

nothing in globe

but there are about 2  
 milligrams of iodine in  
 among phos anhydride  
 in Cup - want to see  
 if Lamp get blue -

Lamp free of blue  
 works off Beautiful  
 hardly any air clamps  
 dull brown filament  
shining



84 —

J.F.O. 116

10 grammes Selenium  
 globe gives most beautiful  
 coloration I ever saw —  
 clamp lead color —  
 wks easy on pump —  
 no blue — filament  
 slightly browned one side

8/25/86/ 1084.

v-amp	Rio	filts	amps	0.10
112	80	140	3975	P.30 - 133 " 16
148	116	128	7600	434 - 847 " 50

set  
 up  
 80 -

Selenium further  
 Volatized to deep red

Minutis lasted 10

8/25/84

No. 65

N-amp. Res. - Hds - Lamp L.P.  
 H.P. - H.P. O.C.P.  
 108. - 72 - 150 - 3445 - 9.59 - 153 - -- 16  
 139 - 104 - 134 - 6400 - 5.15 - 412 - -- 80

Set 40 110  
 4 min min  
 80 92 70

Minutes lasted 130

globe more  
 than ordinary globe  
 didn't get H<sub>2</sub> out  
 I guess -

65-

J. F. Oth

Nothing in globe  
 put on pump when  
 there are 2 milly  
 Godun - Phos <sup>cup</sup>

Hg blue in globe - Godun  
 probably got covered  
 up - globe clean  
 clamp rather clean  
 filament little  
 darkened -

8/23/86

N<sup>o</sup> 74

V- amp- Res- Mills- lamps C.R.  
 102- 74- 138- 3358- 9.85- 138- " 16  
 132- 103- 127- 6025- 5.44- 438- " 80

set 40- 110- 260- 520- 760  
 7- min- min- min- min- min  
 80- 90- 74- 64- 44- 38

Mmms lasted 820

Brownish black- about  
 regular amount  
 clamps slightly dirty  
 filament bright from clamp  
 to  $\frac{1}{2}$  inch up on side that  
 broke —

77

J. F. W.

nothing in Lamp —

new pump with 2 grams  
 iodine right on top  
 phos anhydride - Cup  
 no blue in globe - little  
 whitened near clamps  
 clamps show no tendency  
 to melt run filament  
 way up above regular  
 clamps not clean  
 filament perfectly shiny  
 works as easy no air  
 at least hardly any after  
 red heat & then very little.

8/26/86 No 83

V-amp- Res Hills Lamp C.P. @ C.P.  
107-72-149-3406-270-155--16  
138-103-134-6282-525-420--80

Set	30	60	90	120	180
up	min	min	min	min	min
90	80	78	72	68	58

Minutes lasted 350

Globe black clamps  
moderately clear  
block

83-

J. F. Ott

Nothing in Lamp - put  
on drier for 20 minutes &  
heated - then put on pump  
with piece iodine about  
2 mg on top phos anhyd  
in Cup - globe clear  
no blue - can run  
filament up very high  
without fear melting  
Clamps - filament  
shinning - clamps  
not cleaned

Dried on drier with heat  
then taken off and a solution  
say 20 drops of Gasoline  
with Iodine dissolved in it  
poured in lamp while hot  
& put on pump —

It worked very easy scarcely  
any air came off got a vacuum  
in few minutes, but on allowing  
it to turn air came out —  
also notice faint blue halo  
on clamps although globe  
white white & free from blue;  
Strange to say while the globe is  
white at high Cp. The blue halo  
shows Mercury strong — may be  
decomposition of Iodide of Mercury  
decomposed & then recombined —  
clamps gradually become clean  
showing either H or Cd —

Blue in globe clamps ~~dead~~  
filament shining  
burning  $2\frac{1}{2}$  hours at 30  
Candles - slight browning  
of globe - the shine is not  
perfect on filament but

even all over -

8/26/86, No. 71  
V-amp-Rs-Filbs - lamps O.P.  
96 - 78 - 124 - 8325 - 9.98 - 109 - 16  
125 - 109 - 115 - 6030 - 5.45 - 436 - 80

set 30 60  
up - min - min  
50 - 78 - 72

Mumby's tested 200

globe black more than usual  
for this life - one side fil  
brown other dead black  
Clamps clean -

109

8/26/86 No. 109  
V-amp-Rs-Filbs - lamps O.P.  
94 - 82 - 115 - 8425 - 9.64 - 154 - 16  
124 - 115 - 108 - 6325 - 5.22 - 448 - 80

set 30 60 290 470  
up - min - min - min  
50 - 50 - 44 - 53 - 48

Mumby's tested 200  
Brown back of globe -  
Clamps clean

109-

J. F. 18th

Put in drier with heat  
taken off + a stronger solution  
of Iodine in Gasoline poured  
in hot globe - it started it

works same as 71 - except  
by running up very high it  
flushed in blue - then blue  
came in for some time

Very small quantity air  
keeps coming off at about  
30 Candles but stops when  
at 100 Candles -  $\frac{1}{2}$  hour

+ air comes out burning at 300p

on running it up blue comes in globe

strong showing not enough Iodine  
blue in globe but not much except  
high heat - Green burning

2  $\frac{1}{2}$  @ 3 hours at 30 filament  
shiny + absolutely uncolored

on chain clear like uncolored  
globe started - air was practically  
stopped although now other a microscope tube  
attached

8/26/86 W<sub>9</sub> 96

N. - Amp. - Po. - F. l. l. l. l. - Lamp - C.P.  
 103. - 77 - 134 - 34.95 - 9.44 - 151 - " - 16  
 135 - 108 - 125 - 6459 - 5.11 - 409 - " - 80

Set	60	150	210	390
24"	min	min	min	min
80"	67	56	54	48

Minutes lasted 610.

Brownish black  
 moderate  
 one clamp. clean other  
 dirty fl did block

96 -

J. F. 1886

Lamp not put on driver about  
 1/2 the full 90 deg  
 Gasoline put in globe &  
 put on pump with inside  
 all moist with the liquid.  
 This lamp has blue in burned  
 3 hours at 30 C.P. without  
 absolutely clean tube - then  
 I put it up for 20 minutes  
 to about 100 C. 125 - C.P.  
 filament shiny - globe  
 very faintly tinted brown  
 one clamp clean - noticed  
 when I pulled peg one clamp  
 white hot - other clamp  
 untouched. Wire on  
 inside part broken but fixed  
 rather shabby manner -



8/18/86.

# 91

15 - amp. Res - Fills - G.P. @ C.P.  
 98 - 74 - 133 - 3225 - 11.23 - 164 - 16  
 127 - 108 - 118 - 6075 - 5493 - 454 - 50

act. 50 50 50 520 961 1350  
 up - min - min - min - min - min - min  
 80 - 78 - 68 - 49 - 42 - 34 - 31

Mon. to Sat. 1500.

Yellowish black (very moderate)  
 in globe fil dead black  
Clamp Clean

91-

Unwashed - Undried Lamp

put  $\frac{1}{4}$  of size pin head Iodine  
 in globe — when sold  
 tube obtained piece had  
 disappeared — blue in globe  
 showing not enough

Iodine — probably some  
 reaction with water  
 used it all up as the  
 lamp was undried —

blue in globe but no  
 air out as in those

that are not blue —  
 This also had a halo that  
 filled the whole of narrow  
 neck of lamp —  
 filament thing didn't  
 reverse current clamps  
 not cleaned — globe clear

J. F. O'H.

8/26/86/ No. 108.

V-amp	Res	Ft lbs	Clamps	O.P.
			H.P.	H.P. @ O.P.
112	78	131	3525	9.36 - 150 " 16
182	112	118	6530	8.00 - 410 " 50

set 30 80 340  
 up min min min  
 80 80 74 80

Munchis lasted 400.

globe regular black  
 no brown clamps  
 unchanged fit lead  
 black -

108- unwashed - undried  
 J. S. M.

Put in  $\frac{1}{2}$  pm head - Godwin  
 put on one of the pumps that  
 previously has 200 in in  
 Little blue in globe of globe -  
 & heads of 184 -

Very blue - globe clear  
 filament bright - very  
 slight brown near clamps  
 Clamps unchanged -

8/26/86 No. 99  
 8 - amp - Res - Filts - Lamp - G.P. - H.P. - @ C.P.  
 105 - 50 - 132 - 3725 - 8.86 - 142 " 16  
 132 - 117 - 118 - 7150 - 4.61 - 369 " 80  
 240 - 30 - 50 - 540  
 24 - min - min - min  
 80 - 76 - 70 - 60  
 Minutes lasted 410

globe dark but it is  
 nearly brown  
 clamps clean - fil  
 dead black.

99 - Unwashed - Undried  
 J. F. 100

Full pri head of Podini  
 put on pump when Podini  
 had been before -

no blue or halo - no after  
 air - Clean tube Comes  
 off quick little white  
 deposit down near clamps  
 clamps dirty or rather  
 unchanged from original  
 took lamp off in 15 @ 20  
 minute - filament  
 bright -

8/26/86

110/110

V-amp- R2- 744- <sup>amps. 9.2</sup> H.P. N.A. @ C.P.  
 98- 78- 126- 3350- 985- 105- 16  
 128- 113- 118- 6420- 5714- 411- 20

let 30 50 540 520  
 14- min- min- min- min  
 80- 78- 69- 45- 35

Minuto lasted 765-

Brownish black

Changes clear fil had  
 black

110 - unwashed

J. F. M.

Dried in drier without heat  
 1/2 to 3/4 per head Iodine put  
 in globe - put in pump where  
 there had been previously a very  
 slight amount Iodine -

notwithstanding, considerable  
 iodine & slight whitening  
 near clamps globe is  
 blue - must be there is  
 Hg in drier & the quantity  
 Iodine is insufficient to

Satisfy the whole -  
 the pump tube shows little small  
 quantity of Hg - on running  
 up high clamps show tendency  
 melt - very blue -  
 globe I think is slightly tinted  
 little whitish redness near  
 clamps - shining -  
 the clamps clean after dust & dirt  
 removed -

106- dried without heat on drier  
put Couple Crystals Iodine in  
drier -

Put big gun cap full of  
Iodine in globe & put it  
on one of the old pumps  
which is very much coated  
in fall tube with Hg -

J. F. H.

8/26/861. - No. 87  
 V - amp - Rio - 2 lbs - Lamp C.P.  
 189 - 75 - 146 - 5625 - 211 - 146 - 16  
 140 - 144 - 134 - 6950 - 512 - 410 - 80

act 30 60  
 up - min - min  
 20 - 82 - 79

Minutes lasted 270.

globe brown black  
 more than usual for  
 the life - Clamps red  
 fit dead black.

87 Unwashed or undried -  
 J.F.O.H.

2 few heads Iodine -  
 put on pump with bulb bet  
 phos tube & fall tube to  
 stop formation of Hg<sub>2</sub> in  
 tube & lamp worked well  
 & quick no blue no halo

Iodine all disappeared -  
 it is remarkable that from  
 the time of putting first plug  
 - until put the whole 150  
 volts across not more than a  
 gun cap full of air showed

There was no after dis either  
 as in those lamps which show  
 insufficiency of Iodine -  
 beautiful iridescence near  
 clamps - filament unbranched  
 clamps not dirty still clean  
 but very dull & redish

whitish deposit on inside part near  
 clamps where part of it has cracked the part  
 cracked off is white other part - appears as  
 is copper sulphate or acid floyed impure

as it must have got - the crack  
on close inspection the film  
although even is not very  
shining probably it was not  
so originally - The underexposed  
by transmitted light is brown  
one of the clamps is Chocolate  
colored or ochre color

98 - Unwashed in <sup>J. F. 10th</sup> ~~Swiss~~

2 milligram Podophyllinum

Heated with Kerosene Lamp

Everything thing same as

93 - works & looks same

826/86

44 98

N - amp. Res - 7th - <sup>lamp</sup> C.P. - <sup>HP</sup> C.P.  
102 - 77 - 133 - 3475 - 950 - 152 - 16  
132 - 112 - 118 - 6550 - 504 - 403 - 80

Set	60	125
$\frac{1}{2}$ min		min
80	66	62

Minutes lasted 255

Globosey block  
clamps clean  
film not dead black

8/27/86 No 94  
 r-amp- Res- Filts- <sup>amps</sup> C.P. 14.2 @ C.D.  
 114- .74- 154- 3740- 8.82- 141- " 16  
 148- 1.15- 141- 6885- 4.79- 383- " 26

set 40 40  
 up- min- min  
 20- 78- 69  
 This is 94  
 not 97

Minutes lasted 175-

Only light Brown  
 no block - Clamps dirty  
 filament dried block-

97- Unwashed & undried

5 milligrams Potassium

Heat with Kerosene Lamp

Everything same as 93  
 on working on pump etc

8/26/86 No 97  
 r-amp- Res- Filts- <sup>amps</sup> C.P. 14.2 @ C.D.  
 103- .75- 138- 3425- 9.64- 154- " 16  
 132- 1.07- 124- 6250- 5.28- 422- " 80

set 60 125 305 175 135 155  
 up- min- min- min- min- min  
 20- 74- 65- 44- 33- 28- 80

Minutes lasted 1450.

Globe very block - fil block  
 Clamps clean  
 J.F.O.D.



95-

Unwashed - Undried

10 milligramm Iodide Platinum

Test with Reissner Lamp

Works exactly as in 93

Everything same

J.F.Vt

826/86 10. 93  
 v- amp- Res- 7th - 1st H.P. @ 0.2  
 104- 76- 137- 3500- 243-151 " 16  
 136- 115- 118- 6925- 476- 881 " 8  
 set 69- 125- 553-  
 ref- min- min- min-  
 20- 6F- 57- 45-

Munich tasted 620.

Globe day block clamps  
 chain fit dead block

93. Unwashed undried

15- Milligram Toluene  
 heat with Kenoson Lamp

Blue on globe - large area  
 halo - clamps cleaned  
 appear to work regular

Except there is a surprising  
 small amount of gas comes  
 off at high or even low heat  
 not a gun cap full from the  
 1st peg - Worked it up  
 slowly peg by peg - reversed  
 cannot globe clear -  
 filament shining just off

8/26/86 NO 88  
 v-amp. Res. - 44.6 - 44.9 @ 2.0  
 106 - 77 - 135 - 3625 - 9.11 - 146 - 16  
 137 - 107 - 128 - 6495 - 5.08 - 416 - 10

22.1 - 20  
 7 - min  
 8 - 4  
 20 min. bright spot in center  
 Minutes lasted 40.

globe white filament  
 dead block -  
 clamp black.

88 - unwashed & undried -  
 J. 5.0th

put in about 10 mg Goddard K  
 then about 10 grams of  
 Phos Arby in globe -  
 Some of phos & K9 come in.

Contact turned yellow -  
 think there is a chemical  
 reaction for may be phos &  
 PK + free Goddard - portion  
 of Phos Arby & K9 don't touch  
~~shall be with lamp~~

~~not heated~~ on heating  
 great reaction took place  
 probably Goddard came off  
 fall tube clotted -

globe still browned - no  
 blue in globe or halo - vacuum  
 may not be perfect as in sealing  
 off there was some stuff in the  
 contraction - clamp during  
 filament shining work off  
 easy

104 - Unwashed J.F.O.H.

about 10 mg phos anly  
in globe & 5 mg of Iodine  
on NO 12 pump with double  
Cup one containing nearest  
Lamp phos anly other  
mercury - better to absorb  
Iodine & prevent it going  
into full tube -

Phos anly nearly all melted  
Iodine probably all went  
in Cup as even better than  
didn't stop it & it went into  
full tube - probably all went  
out of lamp or was absorbed  
by phos anly as it has a peculiar  
color - the globe was blue  
& had holes - near clamps  
there is an evidence of a  
reddish film of iodine  
shiny - globe slightly tinted  
thus after has had action of

8/26/86 / No. 104  
V-amp - Res - Filts - Lamp C.D.  
H.P. - H.P. @ C.D.  
118 - .78 - 145 - 3910 - 8.04 - 135 - 16  
146 - 1.10 - 133 - 7125 - 4.63 - 870 - 80

set.  
up  
80.

Used in 3 minutes.

Broke one Lamp  
Dont know No -  
think its one with  
Godide K in -

8/27/86 No. 76  
 v- amp - Ro - Lths - Lamps - C.P.  
 108 - 75 - 144 - 8600 - 9.77 - 144 @ C.P.  
 190 - 108 - 150 - 8700 - 6.92 - 394 " 80

act 40 90  
 up min min  
 20 - 76 - .66

Munk's tasted 190.

Block of lake -  
 Camp clean - for  
 dead block -

76 - Unwashed - Undried -

about 10 C15 - Milligram  
 Bromide Potassium -

Scarcely any blue - slight  
 blue halo - scarcely any  
 air works off easily  
 globe faintly opalescent  
 Clamps clear  
 filament shining -  
 J.F.H.

89 - Unwashed Undried  
5 @ 7 Milligram Bromide  
Potassium -

102 - Unwashed & undried

5 @ 7 Mecklenburg Chloride  
Copper -

Oxidized a pump -  
didn't heat Chloride  
Enough -



90 - Unwashed and dried  
10 @ 15 Milligrams Chloride  
Copper -  
Couldnt get it off too  
much chlorine -

Printed

8/27/86 Wg 92

V.	amp.	Res	Filts	lamp	C.P.
108	77	141	3690	8.94	148 @ C.P.
138	106	130	6415	5.70	148 - 11.16

Set 40 90  
 4h min min  
 80 80 72

minutes lasted 155

globe white brown  
 no black - almost opalescent  
 Cant see fil to see color

92 - Unwashed - Unwashed -  
 2 @ 3 Milligrams Chloride Copper  
 globe turns yellow  
 Chlorine comes out  
 in great quantities +  
 deities pump -  
 Can work it -  
 probably an infinitely  
 small quantity of  
 Chlorine might work -  
 filament shining  
 J.S. 8/28

105- Undried Amershe

5@8 Milligram. Potide Ammonium  
Vataltizes badly globe  
opagely white -  
faint dead black

Busted.

94 - Unworked Unbried -

10 Milligramms Iodide Barium

No blue no halo - scarcely  
any air comes off -

works quick - globe  
faintly opalescent.

Clamps dark -

Card for 94 is where

97 is

J. F. Ott

8/27/86. No. 101

V-amp	Re	fills	lamp	C.P.	@	CR
108-75	144	3583	921	148	"	16
141-104	134	6503	507	406	"	80

Set 30  
4 min  
80 68

minutes lasted 80

only brown deposit  
clamps clean  
fil dead block-

101 - unworked under

1. Milligram Chl Copper  
had to heat with Kerosen  
distress pump - a yellow  
matter valvulizer  
globe has slight yellow  
rust clamps dirty  
filament shiny  
J. F. Ott

120 — dried & heated down stairs  
~~Underside window~~

J. S. Ott

Iodide Zinc

works. Easy just heated slight  
by known but seeing it  
slightly stupid slight  
opaline globe white  
fil shining —  
Clamps ochre color

8/27/86 No 120  
V-amp-Res-Ills-amps C.P.  
110-76-145-3700-8.92-193 " 16  
142-112-127-7050-4.68-374 " 80  
act-60  
sp-min  
80-80  
globe brown black  
considerable for  
short life fit not  
dead black clamps dim  
Minutes lasted-65

121 - Dried & heated down stairs  
J. F. M.

one pin head chloride Cop.

Clear at first, then very blue  
- globe no halo - reversed  
beated with known - very  
little air clamps within

8/27/86 K. U. 121  
V. amp. Res - Fills - Amps 0.2  
111 - 75 - 148 - 3695 - 593 - 143 " 26  
193 - 108 - 133 - 6895 - 682 - 358 " 50  
set 60  
up - min  
W - 62  
Munster basket 105

Brown block in spots  
clamps clean fil deep brown

4/27/86/ 110/122  
 V-amp: Res - 11 lbs - 4.8 - 4.8 @ 2.10  
 97 - .89 - 140 - 2.876 - 11.48 - 124 - 16  
 126 - .98 - 128 - 5442 - 6.06 - 485 - 80  
 2st - 60.  
 1st - min  
 80 - 70  
 Munk's lasted 90

Brown black - fil  
 black

122 - Dried & heated down stain  
 J. F. M.

Iodide Iron - 3 milly  
 Considerable air - works  
 fairly fil shiny -  
 slight brown tint -  
 Clamps dirty red -  
 no blue.



123

Dried &amp; heated down stairs

J. F. O. B.

Iodide Cadmium

3 mg —

just touched it with slight  
heat from known Vataitide  
exceedingly Easy globe  
Somewhat opalescent. clay  
ochre red — no blue  
film + shining

8/27/16

124 123

v. ang.	Res.	Flth.	Temp.	C.P.	@	C.P.
103-114	129	8075	9.71	104	"	16
124-104	128	6170	0.84	92.7	"	80

act.	60	125	2.40
114	min	min	min
80	72	60	54

Brownish  
black.  
Clay + dim  
pl. dead black

Minutes tested 495

8/27/86 No 129  
 v. amp - Res - 7th - Lamp C.P. @ C.P.  
 104 - 84 - 141 - 8420 - 965 - 154 " 16  
 136 - 106 - 129 - 65PS - 576 - 413 " 80  
 set. 60 125  
 of - min - min.  
 80 - 72 - 56  
 Minute Lecture 410

124 - Dried & heated down 3 lines  
 J.F.D.H.

Unslaked Lime 20 miligram  
 Clamps not very clean  
 reddish - felt - t. shen  
 very little blue - reversed  
 current, scarcely any  
 air - splended vac  
 felt vibrates 3/4 inch

Scarcely any blackening  
 one blackened spot off to  
 break -  
 Clamps reddish -

125- Dried & heated form stains  
J. S. Ditt

8 milgramm Idiform

Valalilze very Easy - scarcely  
any gas comes from  
globe slightly tinted, clamp  
unchanged filament  
seems to have a Hydrocarbon  
deposit or it has not been  
touched in slightest.

8/27/96

No. 125-

1- amp - Res - 11 lbs - Lamp 2.0  
114- 76 - 130 - 3845 - 8.38 - 137 " 1.6  
149- 118 - 138 - 7125 - 4.63 - 370 " 80.

act 60

up - min

80 - 64

Opague  
wired

Wm. L. Laid 65

wired

126 Heated & dried down stairs

20 Mg Iridiform pat.  
a badly got all over  
globe — J. S. M.

127/126 No. 127  
 V-amp - Res - Tilt - <sup>knobs 8.2</sup> <sub>4.2 4.2 @ C.P.</sub>  
 105 - 74 - 142 - 3401 - 207 - 153 - 16  
 136 - 1.04 - 131 - 6238 - 5.29 - 923 - 80  
 221 - 30 - 110 - 470 - 703 - 1070 - 1195 - 1890  
 up - min - min - min - min - min - min - min  
 80 - 76 - 75 - 49 - 46 - 43 - 40 - 37

Minnie's lasted 2/10.

Bulb only yellow -  
 much white deposit near clamp  
 also a Copper deposit  
 fil only deep brown

127 Healed & Dried from stain

2 mg Iridium -  
 didn't heat globe at all  
 heat of filament Volatitized  
 it all up in neck clamps  
 unchanged - no H<sub>2</sub> loss  
 deposit + filament shiny  
 straight - globe ~~etc~~  
 tinted slightly -

J. F. M.

925/86/ 128  
 V-amp Res - 2 lbs - lamps a.p.  
 120 - 11 - 141 - 3141 - 10.52 - 168 - 16  
 130 - 100 - 130 - 5757 - 5.74 - 439 - 8.0  
 (at 30 min.)  
 121 - 133 - 91 - 4.74 - 4.66 - 5.41 - 116  
 set 50 60 110  
 up - min - min - min  
 80 - 116 - 96 - 66

Therm to last 175

Lamp brownish white  
 almost opaque -  
 No heat at down stairs top  
 filament shining while other  
 part filament black

128 (H + Drive) D.S.

4 King 9d form J.F. 11/15

Not heated by Kerosene - all  
 the Teflon Volatilized in  
 neck of lamp by heat filament  
 no blue or halo - no tender  
 melt. Clamps unchanged  
 filament Extra shiny prob<sup>ly</sup>  
 Hydrocarbon deposit fil<sup>l</sup>  
 straight. globe faintly  
 tinted - scarcely any  
 gas comes off.

8/27/04 No. 129

2 - amp.	Res	Wt.	Pumps	C.P.
99	101	3082	1182	173 " 16
130	100	5757	5774	439 " 50

set 30 110  
 10 - min - min  
 80 - 78 - 60.

Minerals lasted 140

Globe brownish black  
 Considerable for short  
 life clamps unchanged  
 fil not dead block -

129 - Dried 1st Down str  
 J. F. 10th

5 mg Yodide C heated it  
 slight by known before  
 putting on pump. Did not  
 heat afterwards -

Wks easy hole but no  
 blue in globe - reversed  
 Current. Clamps  
 unchanged -

filament shining  
 globe slightly tinted  
 Y.

925/26

No. 130.

V- amp - Res - Filler - Lumps C.P.  
 108 - 55 - 144 - 3583 - 9.21 - 147 " 16  
 140 - 607 - 131 - 6636 - 4.97 - 398 " 80

act. 20. 165  
 up - min - min  
 88 - 74 - 55

Thimble lasted 165-

Clear yellow - iridescent  
 fil blackish-white deposit in  
 neck -

130 - <sup>J. F. Webb</sup>  
 Dried, heated & cooled in Exhauster

Phos Aubry 10 gms - abs. tube  
 of 9d form - new pump -  
 Phos Aubry seems dry in hand  
 showing that Exhauster does P  
 work well - filament  
 seems oxidized while looking  
 at it on the pump - white  
 Color in globe colorless  
 Phos all shrunk to viscous  
 mass - I find 9d form  
 gives chemical reaction with  
 Phos Aubry & that the  
 Explanation of Sn - all quantity  
 gas coming off - must  
 now try other drying  
 Materials such as Chloride Calcium  
 Burnt lime - ignited KO &  
 NaO - also metallic K & Na  
 also find chl Zinc -  
 burned at 80 for about 1 1/2  
 hours - globe - whitened & filament  
 browned -



131 Undried - unwashed -

10 mg phos anhy  $\frac{1}{16} \times \frac{1}{2}$  inch  
tube filled with 2d form.  
put in phos anhy got viscous  
showing great amount water  
- globe -

8/28/86 12 132  
 V- amp- Res- Lth- Amp- C.P. @ C.P.  
 100 - 80 - 125 - 5339 - 932 - 149 " 16  
 130 - 112 - 116 - 6459 - 511 - 409 " 80  
 set 40 165 275  
 sp. - min - min - min  
 80 - 74 - 56 - 50

Munch's lasted 485-

fil drab block ~~from~~  
 yellowish block in globe  
 Clamps clean -  
 indescence in narrow part  
 globe -

132 -

J. F. Vth

No phos anhy in Cup -  
 heated & dried on Exhaueter cooler  
 & taken off tube of Iodofam put in  
 globe has slight whitening.  
 filament was silvery but after  
 heating Iodofam decomposed &  
 large quantity gas came off  
 but this was quickly  
 absorbed by the infall tube  
 fall tube dirty - The Iodofam  
 Vatalutze into fall tube  
 before heating & at ordinary  
 temperature - The filament  
 is shiny but has lost  
 its silvery appearance -

8/30/86	11-2-133	amps	C.P.	@	C.P.
V-amp-	Res-	11th-	11th	H.R.	
100-	75-	140-	5500-	7.43-	157
106-	108-	126-	6570-	5.08-	406
					16
					80
del-	30				
ref-	100				
80-	76				

Minutes lasted 90.

Pure block - but  
more than there should be  
for short life - clamps  
rather clean but look  
like burnt copper - fil  
blocks -

133-

J. S. Mills

Lamp put on driver & heated  
then put quickly after it was  
nearly cold on No 13 pump - this  
pump had previously 9 lofom + phos  
and only was little viscous on top  
allowed it to run to solid like  
and then didn't touch it for  
20 minutes put in first peg  
run this way for 10 minutes  
then in 10 seconds run it up  
to 80 @ 100 candles for instant  
pulled peg - and then for a  
seconds turn closed it at 80  
@ 100 cp very little air came  
off at higher clamps are still  
dirty lead & oil - after  
working this way 20 or 30 times  
during 110 minutes goes away  
after it instantly -  
bright white -  
clamps but extra clean

8/30/80 11:13  
 v-amp- Res- Lth- Lamp- C.P.  
 117-75-193-3380-927-148 " 16  
 135-108-128-6600-318-900 " 80  
 act 50-90 305  
 75-min-min-min  
 80-80-64-43

Minutes last 380.

Very black for life  
 fil dead black clamps  
 Clean

134- Lamp Andover  
 J. F. Ott

Put on pump with no  
 phos anhydride in cup  
 globe very blue let it  
 Burn for hour after  
 working high air in very  
 fine bubbles kept coming  
 off continuously globe  
 clean - filament considerably  
 browned Clamps  
 most beautifully clean  
 never saw them so clean

135- <sup>J.F. 11th</sup> Cleaned & washed regular  
 Buchromb + SO<sub>4</sub> -  
 rinsed then solution  
 Chloride Zinc poured in  
 then put on exhaust +  
 dried - put on pumps +  
 exhausted reg way  
 didn't heat with Kroy  
 film bright globe  
 slightly browned -  
 Clamps clean -

8/30/86 11<sup>th</sup> 135  
 V - amp - Res - Tolls - Lamp C. 12  
 103. - .78 - 136 - 3475 - 9.58 - 132 " 16  
 134 - 112 - 120 - 6650 - 4.96 - 397 - 80  
 oil 30. 40 305  
 14 - min - min - min  
 80 - 74 - 63 - 48

Munits lasted 675.

Rather black - bluish ring on  
 globe near clamps - clamps clean  
 fil dead black

136 — Dried on Exhauster —  
 put on Cup containing only  
 burnt lime — air kept  
 coming out for hour & 1/2  
 five pin heads could get  
 Vacuum filament badly  
 browned globe clear —  
 Clamps clean —

Exp/86 142 136  
 V-amp - Res - 1 lbs - Lamp 0.2  
 109 - 71 - 154 - 5425 - 9.64 - 44 " 16  
 142 - 105 - 136 - 6620 - 4.99 - 57 " 50

2.1 -  
 1.6 -  
 80 -

lasted 20 minutes

globe clear - fil browned  
 Clamps beautifully clean

137- <sup>J. S. Little</sup> unwashed undried -  
 Fine ferrocyanide K - globe  
 Heated by Kerosin Exhausted  
 quick put on cord & shaken  
 while at 80 cp so ferrocyanide  
 would touch & coat filament  
 with KO -

8/30/86	11/2/87	amps	res	amps	res	amps	res
r-amp	Res	7.11k	-	HP	HP	@	0.12
104	123	143	3370	-	9.79	157	" 16
134	104	129	6175	-	5.24	424	" 80

set  
 1/2  
 50-

Thimble lasted 25.

Paul & clear fil shiny  
 one clamp clean other dirty

8/30/88 / 138  
 V - amp - Res - Filts - Sample - O.P.  
 103 - 73 - 142 - 5375 - 9.90 - 138 " 16  
 132 - 102 - 130 - 5379 - 5.53 - 442 " 50

2.67 30 180  
 mp - min - min  
 80 - 78 - 62

Wm. L. L. 260

globe yellow - fil brown -  
 claps clean

138 Unwashed, Undried -

Chloride alumina - heated  
 by Kerosen. Chlorine Come  
 off & great deal water -  
 distill pump badly.  
 finally got vac.  
 sealed off & put on  
 cord & shook lamp to  
 get alumina in  
 contact with filament  
 while about 100 cp -  
 globe rather clear  
 filament little browned.  
 J. F. Ott



39 - Unwashed undried

<sup>J. F. Ott</sup>  
Fluoridolaleum in globe  
beated & treated as ~~clp~~

37 & 38 - flint blockhead,  
or rather browned -

850/86

N<sup>o</sup> 139

v - amp - Res - little - <sup>clamps</sup> C.P. H.P. H.P. @ C.P.  
107 - 74 - 145 - 3520 - 9.38 - 150 " 16  
138 - 107 - 129 - 6545 - 5.04 - 403 " 80

247 - 30 - 180  
sp - mm - mm  
80 - 80 - 52.

Munich lasted 200

Rather blockish for the life  
fil head block -  
Clamps - dirty

140 Unwashed & Undried  
J. S. 11th

Oxide Aluminum - globe  
worked same as 137  
+ 138 -

8/30/86

No. 140

8-amp - Res - 7th - <sup>lump</sup> C.P. @ C.D.  
96 - 71 - 123 - 3230 - 10.15 - 162 " 16  
125 - 108 - 116 - 8995 - 5.57 - 441 " 80

act 30 150 300  
mp min min min  
70 68 - 50 - 38

Minutes - lasted 700-

globe faintly tinted black  
Alumina clings to sides  
of globe & makes it white  
for black - all powder darkened

141 - unwashed undried

Silicic acid (re) oxide

Silicon - same as

137 & 138 - J.S.H.

7/30/86/ 11/2/91  
v - camp - Res - Fills - Camps C.P.  
107 - 74 - 145 - 3320 - 735 - 130 " 16  
138 - 116 - 131 - 8475 - 514 - 408 " 50

cel. 30 180  
76 - min - min  
80 - 80 - 54

Minute last 210

globe little block fil  
dend block clamps  
clean.

7/7/861 No 142  
 V - amp. Res. - Films - Lamps 0.52  
 H.P. - H.P. @ C.P.  
 95. .77 - 12.9 - 32.50 - 10.15 - 162 - 16  
 124 - 106 - 117 - 582.5 - 5.66 - 463 - 80  
 act 40 140 240 375 575 675  
 af min min min min min min  
 80 - 74 - 66 - 56 - 46 - 48 - 38  
 Minutes last lot 854

yellowish black -  
 less than usual -  
 fil black - Clamps clean

142 - Unwashed undried  
 J. F. Ott

Telephone Lamp black soaked in  
 gasoline & then forced through  
 neck of Exhaust tube in pump in  
 cylinders - Lamp put on 13 pump  
 worked without heating Lamp black  
 probably heat of filament brought  
 some HC out filament steel shiny  
 after getting tube solid & removed  
 Current heated Lamp black  
 with Kerosene Lamp - Exhausted  
 to clean tube & run filament up  
 got clean tube allowed Lamp  
 run at 40 C for 10 minutes  
 sealed off - Clamps show  
 decided tendency melt.  
 Clean - globe clear -

143 -

Same as 142 - film  
 shiny on one side very  
 dull brown on other  
 Everything else same as 142  
 J. F. Otto.

9/17/86	143					
V-amp	Rio	Flls	Temp	C.P.		
104	.65	160	3.000	11.00	176	16
137	.93	148	5650	5.84	467	80
set	40					
up	min					
80	70					
Mimulus last'd 105						

oneside coffil shiny other dead  
 block broke on Dead block  
 side - clamps clean glass about  
 right amount blocking for life -

144-

Same as 142 - But Lamp  
Globe heated by Kerosene  
before working lamp  
Lamp clean & globe clean  
one side fil shiny other  
side very brown J.F. 11th

9/9/86

No. 144

25 amp Res. Filts - Lamp C.P.  
H.P. H.P. @ C.P.

104 - 70 - 149 - 3225 - 10.25 - 164 - 16

135 - 1.03 - 132 - 6125 - 5.35 - 428 - 80

set

up

DO-

Acc'd in 15 min.

Lamp broke off to pieces.

145-

Same as 144-

one side fil not so browned

J. F. Otto

9/7/86

No. 145

V - amp - Res - Filts - Sample O.P.  
H.R. - U.R. @ C.P.

107 - 73 - 147 - 3465 - 203 - 15.8 " 16

138 - 105 - 130 - 6425 - 5.14 - 411 " 80

240 - 40 - 140

up - min - min.

80 - 75 - 56

Thumbnails listed 240

globe darker than shaded bc  
Clamps clean - fil dead  
block -

146 —

Same as 142 —  
film not very shiny  
arc'd —

7/7/86

N<sup>o</sup> 146

V-amp - Res - 7 lbs - 4.2  
106 - 72 - 14P - 3875 - 9.78 - 157 - 76  
137 - 1.03 - 133 - 6250 - 5.28 - 422 - 80

221-

24-

80-

Arc'd in 15 min.

J. S. M.



9/18/88

No. 147.

v - amp - res - filts - lamp C.P. 4.12 - 4.12 @ 0.12  
 108 - 71 - 108 - 3330 - 9.85 - 188 - 16  
 142 - 100 - 142 - 6290 - 5:25 - 920 - 50

ref. 40 140 240  
 140 - min - min - min  
 20 - 88 - 54 - 52

Minutes lasted 245-

fil drab block globe blocker  
 then I should be clamps  
 are clean other little dirty

147 - Unwashed Undried -  
 J. F. H. H.

1/4 Thimbleful Telephone Lamp Black -  
 heated with Kerosene while on pump &  
 few inches of Vacuum - enormous  
 amount of water comes off also  
 great deal of fixed gases -  
 after heating strongly nearly up to  
 melting point glass & getting solid  
 tube worked lamps up slowly peg  
 by peg - reversed current -

clamps at certain C.P. get white  
 hot & globe very blue with Hg  
 after getting up slowly to 20 cp  
 or 30 - then run up rather quickly  
 allowed Lamp to burn at say  
 25-cp for 1/2 hour to get high  
 Vacuum -

filament somewhat Brown &  
 globe sucked in little  
 Octoamps very clean Vac good  
 globe clear. Lamp black don't stick

148

Same as 147 -

one clamp clean other dirty  
globe clean fil bright -

9/7/56		11/2/58			
V - amp	Res	Filts	Lamps	C.P.	
			H.P.	H.P.	@ C.P.
108	.68	189	3230	10.15	162 " 16
141	1.11	140	6350	5.25	419 " 80
act	40				
up	min				
80	70				
Mumuk's tested 45					

globe blocker than t night  
to 62 fil Brownd. all over -  
clamps clean - J.F.V.H.

149

Same as 147—

globe clear  
very clean  
shining

clamps  
fil very

150

Same as as 147 -  
globe clean clamps  
clean fit shimming -

151

Same as 147 - but on  
long contraction in Hg pump  
globe clear. clamps.  
dirty. fil shining

9/7/80 1 112 107  
 0 - amp - Res - Hlts - Temp O.D.  
 107 - .72 - 149 - 3420 - 9.65 - 154 - 16  
 140 - 1.04 - 139 - 6430 - 0.12 - 910 - 80  
 221 - 40 140 240 375 575  
 14 - min min min min min  
 80 - 67 - 54 - 48 - 36 - 34

Munkh - tested 680

globe too black for life  
 Clamps dirty fil  
 Drd block - J.S. Ht

152 —

J. F. Lth

Same as 147 —  
 globe clean — clamp  
 not very clean — fil  
 shining

1/4/86

A<sup>o</sup>/52

V-amp. Res - Fllth - Lamp O.P. - H.P. - H.R. @ 22  
 102 - .75 - 138 - 5350 - 9.85 - 138 - 16  
 182 - 1.06 - 125 - 6200 - 0.32 - 426 - 80

Let 40 140 240 375  
 up - min - min - min - min  
 80 - 78 - 61 - 48 - 38

Mumukshu 420

Lamp bulb rather dark for the  
 life — clamps dirty

9/7/861 No 153  
 10 - amp - 100 - 51 - 124 - 3595 - 9.18 - 147 - 16  
 130 - 118 - 110 - 6800 - 4.85 - 588 - 80

act 140 520 275  
 up - min - min min  
 80 - 80 - 66 - 54

Thumli last lot 7.30

fil black. clamp clean  
 globe usual blocky

print 3

153 - unworked and dried -

Thumbliful telephone lamp block  
 in side tube

J.F. 10th



Heated with Kerosene lamp very hot -  
 pegged up slowly - reversed current  
 ran then over 2 hours below 10 CP -  
 run rather quick up to high CP -  
 work easy -  
 clamps clean fil shiny  
 globe clean

154-

Same as 153.  
fil shiny globe clean.  
Clamps clean

J.F. Ott



155

Same as 153

fil shiny one clamp  
clean other head colored  
globe clean fil  
distorted & nearly  
touching glass J.F.H.

9/7/86  $F_{11}^{10}$  153  
V-amp- Res-  $\frac{1}{4}$  lbs- lamps. O.P.  
104- 72- 195- 3320- 994- 109" 16  
135- 105- 129- 6295- 0.24- 419. 80  
set 40 120 275.  
of min-min-min  
80- 82- 58- 52

Mum. to tested 280.

fil brown block - globe too black  
for life - one clamp clean  
other dirty

156 -

Same as 153  
globe clean fil shiny  
clamps clean

157

Same as 153

globe clean for  
dry clamps

clean J.F. Vth

9/7/86 11-0 157  
v-amp. Res - 766 - 4.2 @ C.10  
100 - 76 - 132 - 3362 - 9.82 - 157 " 16  
131 - 112 - 117 - 6500 - 5.08 - 406 " 80

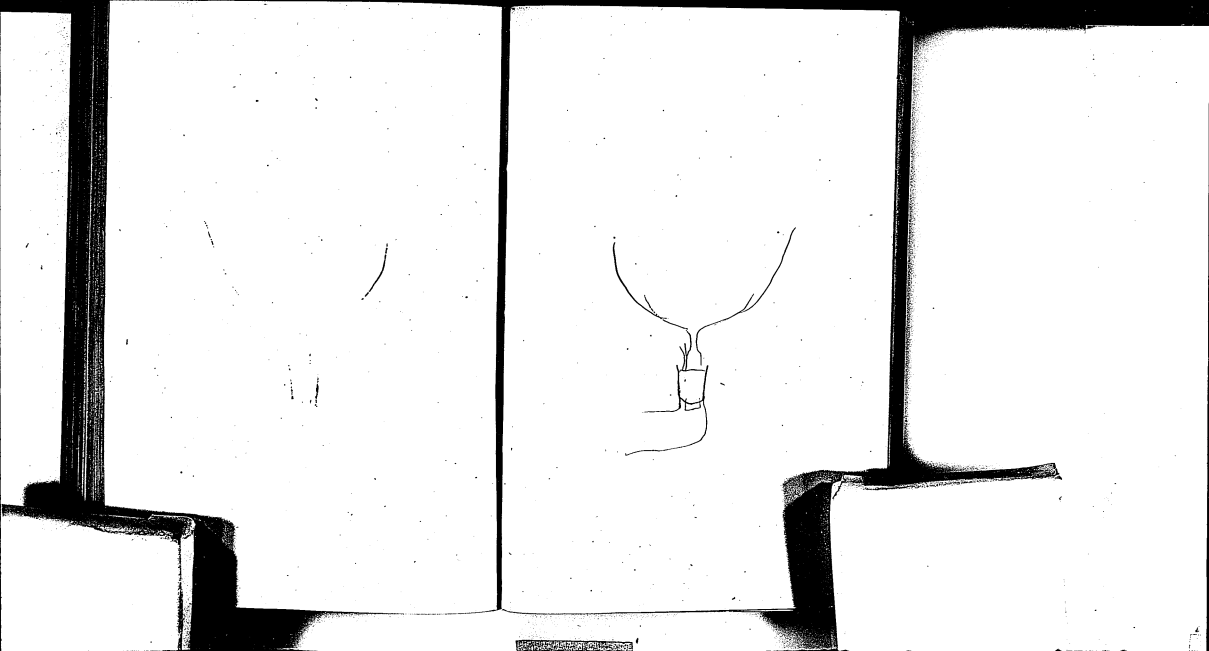
set 48 120 273  
of - min - min - min  
80 - 80 - 52 - 42

Minute - label 580

Very black -  
clamps clean  
for black

158

Same as 153



$$\begin{array}{r}
 139 \\
 188 \\
 \hline
 1112 \\
 1112 \\
 139 \\
 \hline
 261
 \end{array}$$

13

$$\begin{array}{r}
 1185 \\
 13 \\
 \hline
 3555 \\
 1165 \\
 \hline
 15203
 \end{array}$$

**Lamp Factory Notebook, N-86-08-03**

This notebook covers the period August-September 1886. The entries are by Edison, Mina Edison, and John F. Ott. The book contains notes, drawings, and calculations relating to lamp experiments. The lamps are numbered 1 through 80. Loose pages containing the results of lamp tests have been pasted onto many of the notebook pages. On the first page is an inscription by Mina Edison: "East Newark, Aug. 3rd 1886--Experiments on increasing the life of electric lamps." The spine is labeled "30." The book contains 203 pages numbered by an archivist.

Blank pages not filmed: 39-40, 47-48, 73-74, 203.

N-86-08-03

①

Left hand pages  
numbered by N.R.S.  
1964 Oct. 29



Cast Newark, Aug. 3<sup>rd</sup> 1886 -  
Experiments on increasing the  
life of electric lamps -



Mina Edison - Aug. 3/86 Tol  
 Lamp No. 1 - J & Ott - A. R. Keller  
 W. H. Force  
 Cleaned with bichromate of  
 Potash and sulphuric acid  
 hot, washed several times  
 with ordinary water, then coated  
 internally with Glacial phosphoric  
 acid in a dilute solution of  
 water, the water being evaporated  
 leaving a thin film of trans-  
 parent acid. The lamp was  
 then exhausted and heated  
 with kerosene lamp, high  
 vacua obtained, vacuum  
 broken, lamp taken off. Then  
 put on pump again - Broken  
 on the pump by accident.  
 Mina Edison

6

Lamp No. 2 - <sup>mina Edison</sup> J. F. <sup>Aug. 3/86</sup>  
<sup>A. R. Keller</sup>  
<sup>M. H. Price</sup>  
<sup>T. E.</sup>  
Same as lamp number  
1 - except not previously exhausted.  
Water kept coming off for a half  
an hour and was decomposed  
by the filament which was only  
allowed to burn for a short period.  
Finally got solid tube with  
filament about eight candle-  
power kerosene lamp burning. The  
globe was very blue showing strong  
mercury. This pump had mer-  
cury drawn up into the  
phosphoric tube and was not well  
cleaned. One of the clamps melted  
the carrying action being very strong,  
probably due to the great amount  
of mercury vapor. Lamp sealed  
off. Shows slight tinge of  
blackening. The shine is  
partly off of the negative side  
of the filament.  
See record N's back of the page

⑦ 8/4/86/ N<sup>o</sup> 3. Lamp.  
 9 - Amps Res.  $\epsilon$ -alts. Lamp C.P.  
 112 - 67 - 167 - 3318 - 7.94 - 189 - 16  
 147 - 96 - 103 - 6238 - 6.29 - 423 - 80

Set 40 75 120  
 up - min. min. min.  
 80 - 78 - 64 - 54

One lamp nearly melted off.

At 80 C.P. shades hot.

Minuter lasted 195

Lamp No. 3 - Miss Edison A. R. Keller  
 J. S. Allen Aug 3/86  
 The J. J. Jones

Washed carefully with bichromate  
 and  $\text{SO}_4$  hot. Washed well with  
 common water. Dried on hand-  
 drier. No phosphoric film inside  
 of lamp. Started at 1.135.  
 Heating bulb with kerosene lamp  
 Perfectly solid tube at 1.19. The  
 pump is a number 13. Bringing  
 to dull red, only broke tube slightly.  
 Full yellow it broke considerably.  
 On high current breaking rather  
 small. When side of the clamps  
 was reduced large quantities of  
 gas came off instantly. Tube  
 could not be broken at 1.30 -  
 allowed the lamp to burn for  
 twenty minutes after the solid tube  
 was obtained. The poles of this  
 lamp were reversed to reduce the  
 oxide on both clamps. Lamp  
 very blue, large quantity of  
 smearing vapor. Filament very  
 much deflated. Shone nearly all gone  
 from the negative side during the

(9)  
Mina Edison  
Lamp No. 3 continued - Aug 3/86  
Twenty minutes burning - Built  
Slightly tinged

J. F. Off  
A. K. Keller

8/4/86

No. 3

Tal

9 - Amp - Res -  $\frac{1}{2}$  lbs - Lamp C. P.  
49 - .76 - 129 - 3318 - 412 - 412 - C. P.  
30 - 1.69 - 119 - 6282 - 9.94 - 159 - 16  
3.25 - 420 - 80

Set 40 70 120

up - min min - min.

80 - 76 - 62 - 48

Minutes lasted 170

Lamp No. 4 - <sup>Wm. Edison</sup> ~~g 5th~~ Aug 3/86  
a K. Keller <sup>July</sup> ~~TH H. Doney~~  
Cleaned with <sup>July</sup> Dichromate  
and sulphurous acid (30%) - washed  
well in common water, exhausted -  
noticed very little air came off.  
got solid tube - at high incand-  
escence and clear tube the clamps  
were not discolored - Filament  
contorted badly - after not being able  
to break tube broke vacuum -  
Took lamp off & filled partially  
with gasoline, put it back on  
pump without drying it out, only  
heated lamp slightly, the shine  
was not off either side - current  
was worked - did not keep lamp  
at high incandescence over three  
minutes.

Put it on pump at high incand-  
escence - gas keeps coming off slowly  
probably water that went in with  
the gasoline - Very little blue  
in globe but blue hangs to clamps  
clamps only partially cleaned - blue  
gradually changed to a Hg drop right

Continuation <sup>Marya Edison</sup> Lamp No 4 Aug 3/86  
 The mercury <sup>and vapor</sup> appears to be  
 much more on large pump than  
 on single lifting bottle. probably  
 due to churning action of so large  
 body of mercury. Small spectroscope  
 shows Hg & H. Noticed that not-  
 withstanding H. it does not reduce the  
 blackening of the clamps. No CO lines  
 of Hydrocarbon lines visible - small  
 quantity of gas slowly comes off - Fil-  
 ment being burning about 40 lamps  
 candles for 20 minutes - Clamps appear  
 to be getting redish under influence  
 of high current. In sealing it off  
 sucked in and vacuum busted.  
 Although the lamp has been burning  
 40000 candles for three quarters of an  
 hour the shine has not been taken  
 off. ~~except~~ The clamps have a slight  
 chocolate color; while I was sealing  
 it small fine pin heads were still  
 coming down in the mercury tube  
 and the violet persistently clung  
 to the clamp.

Lamp No 5- *Minia Edison at Keller*  
 of 5<sup>th</sup> Aug 3/86

Washed by <sup>100%</sup> dichromate

and  $\text{SO}_4$ , well rinsed in common water - Care was taken <sup>not</sup> to allow  $\text{SO}_4$  to touch the filament or clamps, it was also a stronger solution. Surprisingly small amount of air came out & quick vacuum was obtained and scarcely any air came out on the high current. There was no blue at the clamp but the globe exceedingly blue with mercury vapor after obtaining a good vacuum and not being able to break up the tube. I insured a atmosphere of gasoline in the lamp free from moisture by surrounding the stem and socket of the lamp with a sponge saturated with gasoline and then pulled the stem gradually and broke the vacuum. The gasoline vapor from the sponge rushing into the vacuum instead of air. After gasoline passed globe very blue but no blue at the clamp. After getting solid tube, it could

Edison Aug 3/86  
 continuation Lamp No 6. <sup>2 to 2 1/2</sup>  
 not broken up by heating <sup>in the</sup> the  
 carbon - Allowed to run about  
 five minutes at thirty candles -  
 sealed off. Clamps only moderately  
 tight. Globe not blackened -  
 shell untouched - Carbon not  
 much distorted -

A. K. Keller

It busted, or rather oxidized when  
 set up in pump room probably due  
 to suction of glass in sealing off  
 pump - T. & E.



Lamp No. 6

Using Edison Gas

Aug 5/86

Washed with bichromate &  $\text{SO}_4$ 

carefully rinsed - Dried on drier  
 and put on pump - Got vacuum  
 very considerable of air on lighting -  
 Lamp very blue from  $\text{Hg}$  vapor. Holo  
 went away almost instantly - Got  
 clear tube, allowed lamp to burn  
 altogether about 5 minutes at 60 C.P.  
 noticed shine was somewhat touched  
 on negative. Reversed poles.  
 Clamps were not tight and clean -  
 then put sponge to cup with gasoline  
 and broke vacuum - Re exhaustion  
 obtained quickly a vacuum which  
 was scarcely broken up by heating -  
 sealed off - Certain part of globe  
 slightly tinted black dark - The  
 shine seems now to be equal but  
 not very great -

A K Keller

8/6/86

N<sup>o</sup> 6

V - amp - Res - 7 lbs - lamps C.D.  
 99 - 80 - 124 - 3574 - 12.5 - 4.2 @ C.D.  
 128 - 116 - 110 - 6574 - 9.42 - 157 " 16  
 5.03 - 402 " 80

set 50 70 130 130 625 900 1115  
 up - min - min - min - min - min - min  
 80 - 80 - 70 - 64 - 50 - 46 - 30 - 29

Minutes lasted 1175

Filament & bulb moderately black  
 or brownish black (10) the color is not  
 pure black - vibrates good,  
 I notice a few spots of phos anhydride  
 on inside of bulb - probably flew up  
 into lamp when broke vacuum.  
 where phos anhy. is there is no blackening  
 Clamps dull.

Lamp No. 7- Minia Edison TOL  
 J. S. M. Aug. 5/86  
 My 11:30 am

Cleaned with bichromate &  $\text{SO}_4$   
 then with distilled water. heated  
 on kerosine lamp & put on pump  
 quickly - Sucked in the vacuum  
 and broke -

a. H. Keller

as this lamp is burning all right - it must have  
 been the part leading to the Expansion side  
 that sucked in and not the lamp end of the  
 stem -

V	Amp	Res	Fflb	Lamp		TOL
				HP	GP	
101	.71	142	3172	10.41	167	16
131	1.00	131	5795	5.69	453	80

Set up	30. min	70. min	130 min	250 min	625
50	80	72	61	48	36.

Lasted 860 min

Globe very black - pine block -  
 lamps dull

Lamps N. 8 - Minia Edison TAG  
 500<sup>th</sup> Aug. 5/56 <sup>11.45 am</sup>  
 Cleaned with Bichromate + SO<sub>4</sub>

then with distilled water - then dried  
 and filled with a few lumps of  
 phosphoric anhydride in the bulb -  
 hung for long time on the pumps -  
 Remove the currents.  $\Phi$  almost very much  
 distorted, Lamps clean, shine only  
 slightly taken off from one side - Burned  
 at about forty candles for a half an  
 hour - Phosphoric nearly all melted  
 and ran on the globe -

8/6/86

$\Phi$  - Lamp - Res -  $\Phi$  ttr - Lamp CP  
 106 - .73 - 145 - 3424 - 9.64 - 154 " 16  
 136 - 1.65 - 129 - 6317 - 5.25 - 418 " 80

Set - 30 70 130  
 up - min - min - min  
 80° - 35 - 28 - 24

Filled with blue haze -  
 at 80 min. blue on + clamps + clamps  
 blackened -

Arc'd at 170 minutes -

So far all globes having phos anhy in  
 globe give brown deposit like the long lived  
 51 hours at 80 - Long - This brown looks off on  
 breaking vacuum

Evidently if phos only could be got in  
season to give off water & in exact  
quantity scarcely any blocking  
would occur - 748

Lamp 629

Mina Edison

J. F. Ottling. 5/6/86

Cleaned this same as before -

Cleaned with Bichromate and SO<sub>4</sub>.  
 then with distilled water. Exhausted  
 on pump & then taken off by using sponge  
 & gasoline, heated & gasoline allowed to  
 run into lamp to clamps, then put on  
 pump again and exhausted. Then  
 taken off with sponge saturated with  
 gasoline, put half tumbler full  
 of Phosphoric Anhydride in bulb.  
 Did not stick to sides showing absence  
 of water - Re exhausted. Then <sup>very</sup> slightly  
 off of one side - Filament distorted -  
 Phosphoric did not melt <sup>some of it</sup> but solidi-  
 fied in the small end of the globe.  
 A. K. Keller

8/6/86/

9- Amps. Res- 7.6 lbs - Lamp CP  
 101 - .74 - 136 - 331.8 - 9.94 - 159 - 16  
 132 - 1.04 - 127 - 6061 - 5.44 - 435 - 86

Set - 30 70 130 250  
 up - min - min - min - min  
 80 - 83 - 80 - 44 - 36

at 30 min &amp; + clamps blackened

Re'd at 300 min.  
 Globe inside browned not blackened in  
 vacuum broken this time ended off -

Lamp N° 10 -

Jama Edison

2500 Aug. 5/86 per  
Cleaned Richmond & S. O. 4. Got  
vacuum, broke it through sponge  
saturated with gasoline, put liquid  
gasoline in to get water out of  
clamps - Re-exhausted and then  
broke vacuum through sponge, then  
put several lumps phos. anhydride  
they did not stick at all to globe  
showing no water - Put on pump,  
exhausted, heated lamp slightly  
with kerosene lamp - it volatilized  
Phos. anhyd. - Quick vacuum, after  
getting solid tube lighting filament.  
Scarcely broke tube, on reversing it  
did not break tube - no mercury blue  
+ blue on clamps instantly disappeared  
a K Keller

8/6/86

7. Lamp - Res - Filts - Lamp CP.  
#11 #12 #13 @ CP.  
105 - .71 - 148 - 8310 - 10.00 - 160 " 16  
131 - 1.00 - 136 - 6017 - 5.48 - 438 " 80

Set 30 70  
up - min - min  
80 - 76 - 68

Acc'd in 110 minutes





Hayes No 11 72 50<sup>th</sup> Minia Mill Aug 26/86  
 of Phos. Anhydride in the bulk.  
 there is water vapor - But the  
 volatilized Phos. instantly con-  
 denses into - Both sides of filament  
 shiny -

8/6/86

9. Amp.	Res.	F. t. lbs.	Temp	CP	HP	@ CP
95 - .73	- 130	- 3053	- 10.86	- 173	- "	16
124 - 1.05	- 118	- 5751	- 5.74	- 459	- "	80

Sit-  
up -

80 -

Filled with Blue Haze

Dec'd in 25 minutes

M. L. Dore

Maria Edison

Lamp No. 12 - J. E. H. Aug. 5/86  
TAE m h Pm

Cleaned with Bichromate  
and  $SO_4$  - Then with distilled water  
Got vacuum, broke it through with  
sponge saturated with gasoline.  
Put liquid gasoline in to get water  
out of clamps - Res. exhausted - got  
vacuum, broke it with sponge. <sup>Found</sup>  
these <sup>very little pieces</sup> ~~small pieces~~ of  
Phosphoric anhydride in bulb  
and a little in tube - The shine  
is very slightly taken off and seem to  
be equal on both sides - Very little  
gas came off, unless the current on  
clamps than the other ash color -  
The filament straight - a slight  
palescence at the top of the globe  
of the phosphoric anhydride -

A. K. Keller

V	amp	Res	Fills	HP Lamps	C P	@ 6 P
98	.74	132	3145	1036	166	- 16
128	1.04	123	5884	5761	499	- 80

Setup 30 min 70 min 130 min 250 min  
80 40 .36 32 31 filled with deep blue  
haze at 30 min - deep close blue on X clamp & clamp  
most blackened - globe not blackened - slightly browned  
last 50 min - maybe low vac prevented black

Lamp No 13 <sup>Julia Edison -</sup>  
<sup>J. F. Ott</sup> <sup>Aug. 6/86.</sup>  
<sup>M. N. P. Ott</sup>

Washed with bichromate &  $SO_4$   
 rinsed with common water afterwards  
 distilled water. Clamps allowed  
 to remain soaking for  $\frac{1}{2}$  an hour  
 in distilled water; bulb not dried  
 but heated hot and put on pump;  
 bulb heated with kerosene lamp  
 while exhausting. Broke vacuum  
 with sponge saturated with gasoline  
 & put it on pump with cold water  
 jacket. got rather quick vacuum.  
 Globe has very ~~little~~ blue with Hg.  
 notwithstanding water jacket probably  
 due to pump being connected with syst-  
 em one day before use of cold water.  
 Small spectroscopic showed Hg & CO.  
 Latter feeble: filament very much  
 distorted. Burned on one side by  
 electrical carrying - Bulb slightly  
 tinted - Clamps clean - Did not  
 reverse current -

Lamp No 13/ Mina Edison  
J. F. Otto Aug 6/86 111 in Room

V. Amp - Res - 4.4 lbs - Lamp @ P. @  
98 - .66 - 148 - 2876 - 11.48 - 184. " 16  
127 - .99 - 128 - 6574 - 6.92 - 474 " 80

Set - 60 100  
up - min - min  
80 - 64 - 60

Minutes lasted 110

Lamp No. 14 <sup>Mina Edison</sup> Aug. 6/86

Cleaned with Bichromate  
and  $\text{SO}_4$  - Common water and then  
distilled - Put on water jacket  
pump, still shows considerable  
 $\text{H}_2$  but not as much as previously.  
Sealed spark gauge off - Use castor  
oil in rubber - dried this lamp  
20 minutes or drier; Very consider-  
able gas comes off when Filament  
brought up - Plenty of  $\text{CO}$ . & some  
decomposition of water - Reversed  
polar and worked Filament so tube  
unbroken; Broke Vacuum through  
gasoline sponge but did not take  
lamp off - run for another vacuum  
Globe quite blue with  $\text{H}_2$  - Couldn't  
work halo off clamps - Carbon little  
distorted - Considerably burned on  
one side of filament - Clamps clean.

V	amp	Reo	Filb	Lamp	sp	e
103	69	149	3141	1052	168	" 16
135	1.02	132	6105	541	433	" 80

Let 50 100  
up 64 58 - Lasted 145 min Carbon not very black  
globe rather black.

Lamp No 15 J. F. Edison  
Aug 4/86

Washed with Bichromate + SO<sub>4</sub>  
then water afterwards in distilled  
water - Dried over lime - Put on  
regular pump - Put in few pieces  
of Chloride Calcium - Got quick  
vacuum - Quite blue in bulb.  
Not very much air - Blue came off  
clamps easily - Chloride Calcium  
still loose in bulb did not stick,  
although I heated it strongly with  
kerosine lamp - It illuminated very little  
distorted - one side slightly turned -  
Clamps clean -

646/ No 15

x - amp.	res - 7665	lamps c.p.	150 - 11.2 @ C. 10
100 - .71 - 140 - 3141 -	10.52 - 16F. 16		
150 - 102 - 127 - 5868 -	5.68 - 45V. 80		
set 50 - 150	450 670		
af - min - min - min - min			
50 - 76 - 36 - 41 - 40			

Wm. L. East 11/10

31

Bulb black brown - clamps clean  
vibration filament good. shade of black  
less brown than No 6.

Lamp No 16 Minia Edison  
J. S. Ditt Aug. 6/86  
Washed with Bichromate & SO<sub>4</sub> -  
then common water afterwards  
distilled water - Dried in drier  
Chloride Calcium put in bulb -  
Put on water jacket pump - Pump  
bad, broke vacuum through gas-  
line sponge - put on regular pump  
Took 7 filament little distorted  
bowed on one side - clamps clean  
Reversed current - Blue in globe;  
Blue halo difficult to get off -

V	amp	Res	Filts	lamp	CP	at
106	71	149	3388	9.94	159	16
138	105	131	6115	5.14	411	80

Setup so arc'd in 20 min

No 17 Lamp - <sup>Mina Edison</sup>  
<sup>1.5. 1886</sup> Aug 6/86

cleaned with Rectinamate and SO<sub>4</sub>,  
 then common water afterwards distilled  
 water - Dried in Drier - chloride  
 Calcium put in bulb - then poured  
 in some gasoline, emptied it and  
 put on regular pump. Also hung  
 in clamps, couldn't work off - quite  
 blue in globe - Clean tube, heated  
 chloride Calcium with kerosene but  
 not after filament was lighted -  
 Shiner OK no torch - burned lamp  
 10 min. 40 candles; Clamps very  
 clean - Globe clear - chloride Calcium  
 didn't stick to globe lies in the  
 bottom -

V	amp	Res	Flbr	Temp	Eff	CP
104	72	144	3318	9.94	159	16
134	104	129	6149	5.36	429	80

<sup>C</sup> 50 100  
 72 70 Lasted 163 min  
 Globe moderately black filament rather black.



No 18 lamp - <sup>Mina Edison</sup>  
<sup>g. f. H. Aug 6/86</sup>  
 Washed in Bichromate +  $\text{SO}_4$  - then  
 common water afterwards distilled  
 water - Dried on fire - Then few  
 drops of strong Sulphuric acid put  
 in bulb - Put on regular pump -  
 Oxidized quickly on lighting  
 filament - & volatilization of  $\text{SO}_4$  -

Lamp No 19 <sup>Mina Edison -</sup>  
<sup>Jan 24 1886</sup> Aug 6/86  
 Washed with bichromate and SO<sub>4</sub>  
 then common water afterwards dis-  
 tilled water - Dried as dir - Lamps  
 of caustic ~~potash~~ <sup>potash</sup> put in bulb -  
 Put on regular pump and heated  
 by kerosene lamp, so water is  
 driven off & made anhydrous;  
 On heating filament great deal of  
 gas comes off - Not very blue in globe -  
 Vacuum obtained quickly - Both  
 lamps got clean on melting fili-  
 ment to 30 C.P. - peculiar holes  
 around on clamps & circular may  
 surround small part of globe - Bringing  
 it up high threw out large quantities  
 of gas - After heating filament  
 somewhat, plenty of blue in the  
 globe - Brought current up so clamps  
 commenced to melt - Reversed current -  
 Very much formed on one side -  
 Filament not much distorted -  
 clamps exceedingly clear - On high  
 current clamps got <sup>very</sup> exceedingly hot  
 and large quantities of air evolved

Lamp No 19 <sup>Myria Edison</sup>  
<sup>2.5.1886</sup>  
 come off each time - Aug. 6/86.

Discovery - The action of the carbon  
 on the KO has reduced it to  
 molten metallic state, about 50  
 milligrams of metal with good  
 lustre shown on globe -

V	amp	Res	Flb.	Temp	CP	—
101	.75	135	3353	9.85	158	80
138	1.13	122	6900	4.78	380	

Setup 15 mi  
 80 - 3 candle - lasted 30 minutes, went up  
 in resistance immediately globe tinted  
 filament dead black.

Lamp No. 20 J. F. Allen  
washed with Bichromate + SO<sub>2</sub>  
then common water afterwards  
distilled water - Dried on clean  
glassy glacial-phosphoric  
acid. 1/2 Humble put in globe  
Lamp put on regular pump and  
glacial melted which it does with  
difficulty by benzene lamp - while  
being exhausted lamps cleaned  
themselves while heating the glacial  
The glacial further, then melts to  
glass + slightly rotolizies, emitting  
any time some filament high  
considerable air comes out but the  
tube quickly gets solid appearing  
shining glacial gets hot absorbs the  
product - Blue goes off easily -  
Ordinary amount of blue in globe -  
One lamp pretty clean, other a  
grey - Filament pretty straight -  
Shine probably off a shade on one  
side - Negative - Burned lamp  
20 minutes at 40 cp. -

8/7/86

No 20

V - amp - Res - Filts - <sup>amps</sup> - C.D.  
 99 - 74 - 134 - 3274 - 10.08 - 161 " 16  
 130 - 110 - 119 - 6326 - 522 - 418 " 80

act 50 - 60 100 510  
 up - min - min - min - min  
 80 - 40 - 32 - 29 - 30

Close deep blue on + clamp.

*Mimulus fasciatus* 520

Bull not blackened - filament very  
 black - pieces of filament on side of  
 bulb - one clamp dead black - slight  
 brown deposit in one or two spots

Lamp N° 31 - Aug. 9/86

J. S. M. Minia Edison -  
Hinton, N. Y.

Regular unwashed lamp, put  
in water jacket pump - This lamp  
was not dried, immense quantities  
of water given off so it gave CO every  
time I heated filament. No mercury  
shown in small spectroscope but  
exceedingly small strong carbon acid  
CO in flasks. No blue in globe or if  
any very faint. Could not get a  
vacuum - burned it for a while  
and had to take it off - Put on a  
cleaned and dried lamp - The  
filament of lamp taken off -  
Badly blackened.

Lamp No 22

Mina Edison

Aug. 9/86

H. N. Foree

Washed with Bichromate and  
 SO<sub>2</sub>, then covered with aftershave  
 distilled water - <sup>and with dist.</sup> poured gasoline  
 in and then put on regular pump.  
 Lighted filament and run it al-  
 most instantly to 50 candles before  
 tube was quite solid. Large quantities  
 of air came out probably due to H<sub>2</sub>  
 from decomposition of the gasoline.  
 Even after burning for an hour my  
 fine pin heads of air came off.  
 Sealed it off although microscopic  
 air bubbles coming off. Globe tinted  
 Carbon browned on one side - After  
 24 hours filament vibrates  $\frac{1}{4}$  of an  
 inch and comes to rest in 45 seconds.

8/18/86/

No 22.

V - amp - R -  $\Omega$  lbs - lamps C.D.  
 109 - 78 - 156 - 3362 - 147 - 147 @ 0.12  
 193 - 1.02 - 130 - 6459 - 5.11 - 409 " 16  
 " 50

set 30 60 250  
 up - run - run - run  
 10 - 84 - 72 - 53

Mina's last 450

Vibration good - globes very little blackened  
It has a brown appearance, -

Lamp N° 23

Mina Edison

Aug. 9/61

Washed with Bichromate &  $\text{SO}_2$ , then  
common water afterwards distilled  
water - Martin cleaned lamp -  
Put it on jacket pump to take  
the place of N° 21 - Filament ~~oxidized~~  
oxidized and blackened badly showing  
water - The chloride Calcium used  
for a diver in this pump shows  
no signs of water - It's probably no  
good and phos. anhydride is re-  
quisite -



Lamp W<sup>o</sup> 24 Minia Edison  
 J. F. Allen Aug. 9/86  
 W. H. Force

Washed Bicarbonate and SO<sub>4</sub>, then  
 common water afterwards distilled  
 water - Dried with lime - Put  
 thumbful of Carbonate Potassium  
 in globe - Got vacuum heated KCO<sub>3</sub>  
 gave off lots of gas - heated filament  
 globe very blue with mercury so strong  
 could scarcely see CO<sub>2</sub> with little  
 spectroscope - Stopped heating KCO<sub>3</sub>  
 when it ceased giving off gas - Got solid  
 tube - turned lamp quite high - 80 CP.  
 for 10 or 15 min. Reversed currents.  
 Clamps clean - Shine very strange to  
 say don't seem to be taken off - No blue  
 on clamps - Globe clear - After 24 hrs.  
 filament vibrates  $\frac{1}{2}$  comes to rest in  
 about four second -

Lamp W<sup>o</sup> 20 Minia Edison  
 J. S. <sup>6th</sup> Force Aug 9/86

Washed with Bichromate and SO<sub>4</sub>  
 then common water - afterwards  
 distilled water - Dried on stove -  
 Put on regular pump got vacuum,  
 broke it and took off lamp - Then  
 took smaller tube and put phos-  
 phoric anhydride down through  
 it to bottom of the globe lamp a very  
 little got on side of the globe - Heated  
 globe to make it stick to bottom -  
 Put it on regular pump - Heated  
 this with kerosene for several mins.  
 gently got solid tube and broke it -  
 from time to time instantly pulling  
 plug ran it for 20 minutes with solid  
 tube - no kerosene or current - then  
 put on current and broke tube, very  
 little air comes out each time - allowed  
 it to run 20 minutes, no current, then  
 couldn't break it - Renewed current -  
 let it run 10 mins at 50 C.P. - Could not  
 break tube let it run

8/18/56

No. 25

V - amp. Res - 7000 - 0.2  
 108 - 72 - 130 - 3442 - 9.60 - 154 @ C. 12  
 141 - 101 - 140 - 6282 - 5.25 - 420 " 80

set

up

80.

Serialized in 2 minutes

Lamp No 26. Minia Edison  
Sept. 9/86

Washed with Bichromate and  
SO<sub>4</sub>, then common water, afterwards  
with distilled water. Dried on dried  
Put tube down and forced a small  
quantity, of the size of a pea, of  
Phos. Anhydride to bottom - a  
little stuck to the side of the globe  
then heated globe to make Phos.  
Anhydride stick to the bottom  
of the lamp - Put it on water  
jacket pump - this lamp pump  
had some Phos. Anhydride put  
on the chloride calcium -  
Heating lamp gently with Kerosene  
lamp - Keep it exhausting while  
is heating. Brought Carbon to  
dull red for 1/2 min. Keep 1<sup>st</sup>  
peg in on 2<sup>nd</sup> current for 10 min -  
Heated for 1/2 hour with Kerosene  
with solid tube to give plenty  
chance for Phos. Anhydride in  
globe to absorb the water vapor.  
The small piece of Phos. Anhydride  
dropped down partly on side globe



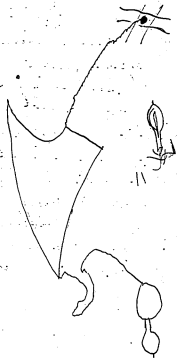
(P1)

Lamp No 26 continued. <sup>Wm. Edison</sup>  
 Sept. 7/86  
 partly in full tube. When it became  
 viscid = probably some volatilized =  
 then brought lamp up quickly to 16 candle  
 and disconnected. Considerable air  
 came off. Then heated it to 80 candle  
 power - considerable air came off.  
 The globe is very blue from mercury  
vapor; where did it come from?  
 Can't get rid of. Hg blue in the  
 globe - It's very strong. Can't break  
 tube, allowed it to burn 10 minutes  
 at 80 candle power, sealed off.  
 Globe slightly tinted, filament  
 browned both sides. - Very slight  
 volatilization - Phos. Anhydride  
 in bottom of the globe - Clamp dirty  
 after 24 hours filament vibrates  
 and comes to rest in one second.  
 Seal cracked. J. S. O'H.

Lamp No. 27 *Minia Edison*  
 J. A. H. Sept. 9/86

Washed acid & with Bichromate and  
 SO<sub>4</sub> then with common water, after-  
 wards distilled water. Dried  
 on fire for  $\frac{3}{4}$  of an hour.

then with center tube put  $\frac{1}{2}$  thickness  
 full of Rhos. Anhydride at bottom.  
 In the lamp - none touched sides -  
 just little bit got inside parts be-  
 tween the clamps. Put in long  
 tube and got most of it off. Heated  
 lamp with Kerosene to soften and  
 stick Rhos. Anhydride to glass so  
 it wouldn't drop down. Put it on  
 regular pump with Kerosene lamp  
 under the bulb - It got a solid  
 tube very quickly. On first current  
 it I put, it plugs in which is  
 4 @ 5 plugs less than red and keep  
 pump going with solid tube - this  
 current and Kerosene for  $\frac{1}{2}$  an hour.  
 Put it on second plug at 3. 26. p.m.  
 It did not break tube but small  
 pin heads are coming down all the  
 time but few in number after  
 running gradually to fourth plug



No. 27 continued Minia Edison  
J. O. P. H. Sept. 9/86

and dull red, ran it up quickly  
to high candle power. Great deal  
of gas came off - But inside of a  
minute it all went and could not  
break tube even by convulsions - Guess  
there was true air and not water -  
Shine all right - Globe very blue, no  
halo - Lamp clean - Filament much  
bent - Clamps no clean - Phos.  
Anhydride stuck to bottom not  
none went on sides - After 24 hrs.  
filament vibrates  $\frac{1}{16}$  and comes to  
rest inside of 3 seconds. Seal cracked

Lamp No. 28 *Maria Edison*  
J. F. W. Sept. 9/86.

General experiments -

Carbonate and Bichromate dry, ground  
up with pyrogallie acid, absorb  
oxygen from the air, use this in  
pump - Carbonate better than Bi. Carb.

Phos. anhydride can be kept and  
moulded in any shape under  
gasoline and of course almost  
any Hydrocarbon -

Tested clean lamps after going  
through washing with Bichromate of  
Potash +  $\text{SO}_4$  and distilled water -  
Faint trace  $\text{SO}_4$  with Chl. Barium  
but second boiling and washing  
with distilled  $\text{H}_2\text{O}$  got rid of it  
entirely -

Mercury is attacked by Sulphuric  
& Potassium - Perhaps it won't  
be dry - Can use this substance in  
pump to absorb Hg vapors -



Lamp<sup>no</sup> 28 of 50th Mina Edison  
Sept. 9/86.

Started 1150- 2 1/2 lb. Hg pump  
Slowest pump yet. Lamp washed  
by Martin on 12<sup>th</sup> of Aug. laid un-  
til today, the 21<sup>st</sup> of Aug. With cork  
in had previously been washed in  
Bichromate &  $\text{SO}_4$ , then common  
water, afterwards distilled;

I put Phos. Anhydride in  
Exhaust tube and made regular  
contraction both sides of it. Heated  
lamp while exhausting by Kerosene.  
Took it off at 3 o'clock worked it  
up very slowly. Then burned it  
for <sup>about</sup> an hour at 80 C<sup>p</sup>. Lint the  
in globe; Did not remove poles. One  
side somewhat browned other side  
very shining clamps. On side that  
is browned is dull and lead colored,  
other pretty clean. Globe considerably  
tinted in regular blotches. -

(91)

Lamp No 28 -

Minia Edison

Sept. 9/86

Lamp tested - 8/21/86

J. S. 666

9 -	amp	Res	4 lts	Lamp CP
112	-	85	-	120 - 3849 - 8.57 - 137 - 16
134	-	1.22	-	109 - 7211 - 4.58 - 366 - 50

St	40	70	180	310
4p	-	min	-	min
80	-	78	-	72 - 62 - 50

Mummers lasted 600

Belt very black one clamp  
black. Vacuum good.

Lamp 20° 2/86  
 Minia Edison  
 p. 500 Sept. 7/86

Tried running lamp off no vacuum  
 Regular, then breaking vacuum  
 and testing sides of globe for trans-  
 parent film - Did not get any. Put  
 on another lamp and run off  
 regular but burned it for about  
 40 minutes at 50 Cp., got blacking  
 in blotches, this came off in film  
 quickly with HCL. Could not de-  
 color it with HCL and Nitric acid  
 together or on addition of  $SO_2$  - On  
 heating either there was a very  
 transparent film in first lamp,  
 that could not be seen which was  
 Silica from the ash or the film  
 is a compound formed by  $H_2O$  &  
 the carbon, which compound is  
 not thus attacked -

Lamp No. 30

Mina Edison  
J. S. 1885 Sept. 9/86

Put solution of permanganate  
of potash in globe and evaporated  
water leaving a film. Run it  
regular and then allowed it to  
stay on pump an hour at 80 C.P.  
about. Globe blackened in very  
conspicuous blotches. Certain  
place showed absolutely no blackening.  
No cure -

8/23/86/ No. 30.

	Temp.	Res.	Filts.	Lamp, C.P.	H.P.	H.P. @ C.P.
98 -	80	-	122	-	3451	9.57 - 153 " 16
129 -	112	-	115	-	6371	5.18 - 414 " 80

Set - 28  
up - min.  
80 - 68

Acid in 35 min.

(97)

Lamp No 29 J 500 <sup>thina Edison</sup>

Sept. 9/86.

Slow pump - Phos. anhydride only  
 in tubes and the bulb - Got vacuum  
 then heated it quickly, got all air  
 could out and then pump stopped -  
 Got good vacuum and sealed off.  
 Heated one side partially by  
 Kerosene lamp -

8/23/86 Lamp 29.

9 - Lamp - Res - fitts - Lamp CP  
 113 - 71 - 159 - 3451 - H. 12 - HP. @ CP  
 145 - 133 - 140 - 6592 - 5.01 - 4.01 " 80

Set  
 up  
 80

Acid in 20 minutes -

Lamp No. 31 of Thomas Edison  
 Sept. 9/86  
 Solution of  $\text{Na}_2\text{P}_2\text{O}_7$  Pyrophosphate  
 Soda - Washed with Bichromate<sup>K</sup> and  
 $\text{SO}_2$ , then common water, afterwards  
 distilled water then the distilled  
 water containing the pyrophosphate -  
 a little solution touched cath and  
 clamps. Dried on drier -  $13\frac{1}{2}$   
 pump - filament slightly browned  
 both sides having reversed current.  
 Globe slightly tinted, more near  
 clamps. One clamp nearly melted  
 Globe not so very black for the life -  
 Rather less than average - clamps  
 clean -

8/23/86/ No. 31.

7 - Amp - Res - f. lts - Lamp CP  
 104 - .77 - 135 - 3539 - 9.32 - 149 " 16  
 127 - 1.10 - 125 - 6237 - 6.29 - 423 " 86

SL - 40 80 - 150 250 450  
 up - min - min - min - min - min  
 80 - 72 - 66 - 59 - 55 - 44

Minutes lasted - 6.20

Lamp No 32

Mina Edison

Sept. 9/86

Solution of Nitrate Ammonia - J. F. O'H

washed with Bicarbonate, K and  $\text{SO}_3$   
 common and distilled water then  
 the distilled water containing Nitrate  
 Ammonia - & ~~water~~. Dried on  
 dish -  $13\frac{1}{2}$  pump - & shinnest  
 slightly browned on both sides,  
 having reversed contents. Clamps  
 melted. tried another -

Lamp No 33

Mina Edison  
Sept. 9/86

Solution of Chloride Copper -  
Washed with Bicarbonate, Hand SO<sub>3</sub>  
common and distilled water then  
distilled water containing the  
Chloride copper - Dried on dish.  
13 1/2 pump - Filament very slightly  
blackened - Globe at first white  
afterwards got quite blue - Probably  
chloride decomposed; bulb clear -  
except slight coppering, faint deposit,  
done by clamps - Clamps clean  
but dull.

8/23/86/

No. 33

9 - Amp - Res - Filts - Lamp CP  
 104 - .73 - 142 - 3362 - 982-157-16  
 107 - 1.03 - 133 - 6238 - 5.29-423-80

Set	40	-	80	100	200	430	740
up	min	-	min	min	min	min	min
80	-	66	-	62	-	68	- 50 - 44 - 40

900. 1205 1425 1675 1815  
 min - min - min - min - min  
 39 - 32 - 30 - 30 - 29

Minutes tested 2005.  
Globe brownish black. Clamps clean.



Lamp No 34

Solution sesqui-chloride  
chromium with little proto-chloride  
chromium - Washed with Bi-  
chromate, H<sup>+</sup> and SO<sub>3</sub>, common  
water and distilled water after-  
wards distilled water containing  
chloride chromium with little proto-  
chloride chromate - Dried on  
dish <sup>13 1/2 pages</sup> - Sesqui dont seem to  
dissolve but fine powder - Lamp  
bult - good vacuum, filament  
slightly browned on one side -  
Revised current; Clamps clean  
but dull - Blackened globe - One  
side filament not dead black -  
Clamps clean -

8/23/81 No. 34

9- Amp - Res - #lbs - Lamp - CP  
 102- .72 - 141 - 3230 - 10.21 - 108" 16  
 102- .65 - 125 - 6149 - 5.37 - 420" 80

Set-  
up - 40 80 100 250  
min - min - min - min  
80 - 76 - 62 - 52 - 44

Minutes lasted 325.

Lamp No 30 <sup>Wm. Edison</sup> J. S. M. Sept. 9/86

Solution perchloride of Antimony  
in water ~~and~~ = Solution rather  
opalescent - Washed with Bechmont  
K and SO<sub>3</sub>, common water and  
distilled, then distilled water con-  
taining perchloride of Antimony  
in water - Dried on drier - 1 1/2 puffs  
Clamps clean - Filament seems im-  
mured either side - Globe just a  
shade tinted - ~~black~~

Globe ordinary black - clamps  
clean - Filament dead black -

8/23/86/ No. 35

9 - Amp - Rev - Filts - Lamp CP  
106 - 72 - 147 - 3362 - 7.82-107" 16  
188 - 108 - 127 - 6591 - 6.01-401" 50

Set 40 80 150 250 430  
up min - min - min - min - min  
80 - 78 - 68 - 56 - 49 - 39

Minutes lasted 550

Lamp No. 36 g. 5.0<sup>th</sup> <sup>Wm. Edison</sup> Sept. 9/86

Solution Glacial Phos. acid -  
 washed with Bichromate, K and SO<sub>3</sub>  
 common and distilled water, then  
 distilled water containing Glacial  
 Phos. acid. Dried on air-pump  
 12 1/2 - Solution got on carbon and  
 clamps - Globe clear, filament  
 pretty shiny, clamps moderately  
 clean - nothing else noticeable -

2/23/86/

No. 36

W. Amp - Res - Htts - Lamp C.P.C.P.  
 105 - .73 - 144 - 3406 - 9.70 - 155 - 16  
 136 - 1.05 - 129 - 6326 - 5.22 - 418 - 80

Set 40 50 100 200  
 up - min - min - min - min  
 50 - 74 - 68 - 57 - 40

Lasted 250 minutes

(11)

Sample No 37 . . . <sup>Wm</sup> Edison  
J. S. Oth Sept. 9/86

Solution Potassium Nitrate -  
Washed with Bichromate, K and  $SO_3$   
common water and distilled water  
then distilled water containing  
Potassium nitrate. - Solution allowed  
to get on carbon and clamps -  
Dried on fire -  $13\frac{1}{2}$  pump.  
Acid hard to get off pump -  
Deposit quite large on glass. Will  
try a weaker solution -  
Burstid -

Lamp 38

Mina Edison  
J. F. M. Spt. 9/86

Solution Pyrogallie acid and  
Bicarbonate Potash - Washed with  
Bichromate, K and  $SO_3$ , common  
and distilled water then distilled  
water containing Pyrogallie acid  
and Bicarbonate Potash - Solution  
did not get on clamps or carbon -  
Dried on drier - 13 1/2 pump -

Lamp blackened as much as  
though it had been running 500  
minutes - due to action of P on  
Pyrogallie - Filament only slightly  
of any browned, about same color -  
Filament dead black -

8/24/86 - Lamp No 38

9- Amp. - Res. - Htz - Lamp C.P.  
H.P. - H.P. - @C.P.  
107 - .76 - 146 - 3898 - 9.17 - 147 " 16  
140 - 112 - 125 - 6946 - 4.75 - 380 " 80

Set	30	60	120	235
up	- min	- min	- min	- min
80	- 75	- 73	- 52	- 40

Minutes lasted 200

Lamp 39 J. F. W. Sept. 9/86  
 Magnesium strong-  
 washed with Bi chromate - K and SO<sub>3</sub>,  
 common and distilled water then  
 distilled water containing chloride  
 Magnesium - Got on clamps and  
 carbon - dried on diase - Pump 13 1/2  
 the mercury pump stopped and  
 Phos. anhydride flew up into  
 lamp - Stopped for the night - Let  
 lamp stay on pump, at 9 A.M. the  
 24<sup>th</sup> of Aug. started it up again -  
 Almost impossible to get vacuum  
 again after two hours had. Phos.  
 anhydride all viscous from absorption  
 of water, probably from chloride  
 Magnesium filament - Burned  
 clamps, moderately clean - Plate  
 clean except white deposit -  
 8/24/86 Lamp 39 -  
 Lamp CP  
 Res - 4.17 - 4.17 - H.P. @ C.P.  
 108 - .75 - 143 - 3583 - 9.21 - 147 " 16  
 139 - 1.08 - 129 - 6636 - 4.97 - 398 " 20

Del-  
 up  
 86

Acc'd in 20 minutes

Lamp #0 - <sup>Wm. Edison</sup> J. F. M. - Sept. 9/86 -

Solution Bisulphide Carbon -

Unwashed lamp - put it on pump  
Pump stopped, Phos. Anhydride  
pumped into lamp - Let it re-  
main on pump but with air space  
all night - Started it 9.30 A.M. on  
24<sup>th</sup> of Aug. Almost impossible to get  
vacuum - finally got fair one -

One side of filament burned - like  
little burned in spots - Phos. Anhyd.  
melted in little spots - clamps  
clean, not absolutely sure that this is  
bisulphide - like clean - One  
lamp black other clean - filament  
black -

try again -

8/24/86 No. 40.

Lamp CP  
7- Amp. - Res - Htts - H.P. - H.P. - @ C.P.  
113 - 77 - 134 - 3494 - 9.44 - 157 " 16  
133 - 110 - 121 - 6459 - 6.11 - 409 " 80

Set - 70 - 180  
up - min - min  
80 - 38 - 30

Minutes lasted 130.

Lamp 41 Mica Edison  
J. F. Otto Sept. 9/86

Unwashed lamp, solution  
oxide magnesium,  $\frac{1}{2}$  gram dry -  
filament slightly burned - very diffi-  
cult to get off pump - Hard to keep  
clamps from melting - very blue Hg.  
clamps very clean - globe clean.

8/25/86 No 41 -

9 - Amp - Res - Htts - Lamp CP  
183 - .73 - 141 - 3318 - 9.94 - 184 - " 1L  
185 - 1.46 - 129 - 6382 - 5.25 - 420 - " 80

St - 80 - 150 - 260  
up min - min - min  
80 - 71 - 52 - 38

Minutes lasted 315



Lamp 42

J. F. H. Minia Edison

Sept. 9/86

Unwashed lamp -

Hyper oxide Barium -  $\frac{1}{4}$  gramme  
 Burke first one made second filament  
 slightly bowed on one side - very  
 difficult to keep from melting  
 lamps - globe clear -

8/24/86/

No. 42

4 - Lamp - Res. - Filts - Lamp CP  
 98 - .72 - 136 - 3141 - 10.52 - 168 - 16  
 128 - 1.01 - 126 - 5707 - 5.78 - 462 - 80

lit 50 150 260 460 770 940  
 up - min - min - min - min - min - min  
 80 - 76 - 60 - 50 - 42 - 33 - 30

Minutes lasted 1075-

Globe very little blackened

Lamps clear not so much  
 blackened as 51 -

Lamp #3

Wm. Edison

Sept. 9/86 -

Washed lamp - J. F. Ott

Solution Borate of Berylate

1/4 gramme -

Globe clear - Filament bright - very difficult to prevent clamps melting

8/24/86/

No 43

5- Amp - Res - Htts - Lamp CP  
99- .73 - 136 - 2185 - 10.36 - 166 - 16  
180 - 1.03 - 126 - 5928 - 5.57 - 446 - 80

Set 50 150 260 460  
up - min - min - min - min  
80 - 68 - 50 - 38 - 36

Minutes lasted 545

Less than ordinary blackening of globe - clamps clear - One side of filament not dead black -

Lamp No 44 g. 5. 11. 11. Minia Edison  
Sept. 9/86  
Unwashed lamp - Solution

Oxide of copper -  
Hard to get off of pump - Very  
blue from Hg. One side of filament  
slightly blackened

8/24/86. No. 44.

4. Lamp - Res - H.P. - H.P. @ C.P.  
100 - 70 - 143 - 3097 - 10.67 - 171 " 16  
131 - 110 - 131 - 5795 - 5.69 - 433 " 80

Set 50. 150 260  
up - min - min - min  
80 70 52 41

Minia lasted 365  
Globe black perhaps above  
ordinary -

Lamp 45- J. S. H. Minia Edison  
Sept. 9/86-

Unrashed lamp - Solution  
Aside of Antine my -  $\frac{1}{2}$  Gamme day  
Almost impossible to get air out  
of this lamp - Probably it decom-  
posed - Clamps clean - Very difficult  
preventing them meeting. One side  
filament burned - Blue hangs -  
curr Built - Very little blackened -  
filament dead black - clamps clean -  
Dead black

8/24/86 No 45-

7- amp - Res - 4.112 - Lamps CR  
102 - .6 - 134 - 3457 - 4.11 - 4.11 @ CR  
133 - 1.10 - 121 - 6459 - 5.11 - 469 " 80

Set	50	150	260
up	min	min	min
80	- 72 -	51 -	89.

Minutes lasted 280

Lamp No. 46 J. F. Edson  
Unwashed lamp - Solution

Amorphous Phosphorus -  $\frac{1}{4}$  gramme  
cups wt. Amorphous Phosphorus  
stands high heat without change -  
Lamp works well - Phos. sticks  
in one place - Clamps very dark -  
filament bright - Bolt clean -

8/24/86/ No 46

Y - Amp - Res - Fitts - Lamp CP  
97 - .72 - 135 - 3097 - 10.67 - 171 " 16  
127 - 1.00 - 127 - 5618 - 5.87 - 476 " 80

Set  
up - min  
80 - 78

try again

Minutes lasted 140

Filament only burned. Glass  
not black but brown-light brown -

(134)

Lamp No. 47 <sup>Wm. Edison</sup> Sept. 9/82

Unwashed lamp, Solution Arsenate  
Antimony -  $\frac{1}{4}$  gramme dry.

No. blue in globe -

Distis fall tube -

Clamps dark drat -

Built slightly tinted near clamps  
Filament bright -

8/24/86/ No. 47

5 Amp - Res -  $\frac{1}{4}$  lbs - Lamp C.P.  
+1 P. - +1 P. @ C.P.  
119 - 1.75 - 152 - 36.28 - 9.09 - 145 - 16  
142 - 1.09 - 130 - 68.57 - 4.81 - 385 - 80

Set - 50 150  
up - min - min  
80 - 78 - 57

Minutes lasted 100 -  
Globe only moderately black  
clamps clean -

Lamp No. 48 J. F. O'H. Minia Edison  
Sept 9/16.

Unwashed lamp - Solution  
Sisqui oxide of Iron.

Enormous amount of gas comes off  
when heated by Kerosene lamp -  
Clear globe - Clamps clean - and  
alsthough burned high for  $\frac{1}{2}$  hour  
both sides of filament shining -

8/24/86/ No. 48

9 - Amp. Res - #1112 - Lamp CP  
101 - .74 - 136 - 3318 - 9.94 - 189" 16  
130 - 1.05 - 114 - 6661 - 5.45 - 436" 80

Set	20	100	230	350	660	830	980
up	min	min	min	min	min	min	min
80	73	60	52	44	34	34	30

Minia last 1160

Globe very black -  
filament black - clamps clear -

Lamp 49

Mina Edison  
J. F. M. Sept. 9/66

Murashed Lamp - Solution  
Chloride Ammonium - Dances  
and volatilizes in lamp with  
Kerosene lamp - but doesn't heat  
vacuum in the least - filament  
dead black - too much frosted -  
no good -

8/24/86/

No. 49

4 - Lamp - Res - ~~filts~~ Lamp CP  
117 - .74 - 158 - 3849 - 8.57 - 137 " 16  
149 - 112 - 133 - 6388 - 6.16 - 361 " 70

Sit - 20  
up - min  
90 - 7

Minutes lasted 60



Lamp 50 J. F. H. Minia Edison  
Sept. 9/86  
Unwashed Lamp -

1/2 Gramme Lamp dry - Solution  
Iodide Lead - Kerosene Lamp used  
Iodide Lead volatilized without  
decomposition - Globe very yellow  
almost opaque - Can't see state of  
filament - Came off vac. very  
easily -

8/24/86/

1/2. 00 -

9 - Lamp - Res - Hltz - Lamp CP  
124 - .87 - 143 - 4777 - Hltz - 4.91 - 111 " 16  
149 - 1.14 - 131 - 7521 - 4.39 - 193 " 44

Set - 40  
up - min

44 - 40

Minia lasted 70.

Lamp 51. J.F. 0.0% Minia Edison  
Sept. 9/86  
Unrashed lamp -

Solution Fluoride Calcium -  
1/4 gramme - 4 filament - 1000  
one side - Clamps clean - Globe  
clean - Don't work well on pump -  
\$24/86/ • 70.57 -

T- Amp - Res - Filts - Lamp CP  
HP - HP @ CP.  
111 - .76 - 133 - 8406 - 9.70 - 100 - 116  
180 - 1.54 - 118 - 6326 - 0.23 - 418 - 80

Set	up	min	min	min	min	min
80	76	56	48	45	34	

Minutes lasted 820

Globe only little blackened  
Best yet except the 3100 minute lamp.  
There are spots where there is no  
blackening -

(1540) 13

Lamp No. 52 <sup>Minia Edison</sup> g. 5.00 Sept. 9/86 -  
Unwashed Lamp -

Solution Dry peroxide Barium.  
1/2 gramme - Heated with Kerosene -  
Filament OK. works well on pump

8/24/86/ No. 52

8 - Amp - Res. 4.00 - Lamps CP  
110 - .77 - 143 - 3700 - H. R. H.P. @ CP  
144 - 1.15 - 125 - 7344 - 4.49 - 813 "50

Set 70 180 390  
up - min - min - min  
50 - 56 - 48 - 37

Minutes lasted 575

Scarcely any blackening globe -  
Clamps clean - Filament dead  
black -

27 1/2 Washed with Bichromate. K  
and  $\text{SO}_3$ , common water and  
distilled then distilled water con-  
taining Fe sterile Potassium solution  
(not sure) may be Bisulphate carbom-  
but think not. - forgot to number it  
filament bright - Lamp - incandescent  
fingers near clamps -  
clamps dirty.

24/86/ no 27 1/2  
Oxidized before reading could be  
obtained - Cracked in seal.

J. F. M.

145

Lanip 53

Minia Edison  
Sept. 9/86 -

Lamp 54

Unia Edison -  
Sept. 9/86 -

Unwashed lamp - Metallic tin  
in powder. White Volatile matter  
comes off - very little air comes off -  
White except at high in -  
candescence then little blue only.  
Dunks splendidly in pump - filament  
right both sides - Carbons perfectly  
straight -

8/20/86/ No 54 -

9 - Lamp - Res - Filts - Lamp - CP  
104 - .79 - 132 - 3650 - 9.04 - 145 " 16  
135 - 1.13 - 120 - 6750 - 4.89 - 391 - 80

Set	40	130	300	450
up - min	- min	- min	- min	- min
80	- 72 -	80 -	42 -	87

Minutes lasted 600  
pretty black J.F.O.H.

Lamp 55

Wm. Edison

Sept. 9/86

Unwashed lamp - Solution

Acetate Aluminum. Yellow residue

Globe clean - clamps clean -

Filament trimmed both sides -  
distorted -

8/24/86

To 53

4 - Amp - Res - Htts - Lamp CP  
111 - .70 - 109 - 3451 - 9.57 - 103 - 16

147 - 1.04 - 141 - 6769 - 4.58 - 390 - 80

Set

up

80 -

Arc'd in 10 minutes

arc'd

J. F. Vt.

Lamp 56

Wm. Edman  
Sept. 9/86

Unwashed Lamp.

Solution Lithuag - Glbe clear,  
filament OK - Had to take it  
off pump & start quickly pump  
stopped - clamps clean -

8/25/86/ N. 56

4 - Lamp - Res - Filter - <sup>Lamp CP</sup> 21.10 - 41.0 @ CP  
165 - .75 - 140 - 3495 - 9.44 - 101 - 12  
186 - 1.05 - 129 - 6326 - 5.22 - 418 - 80

Set	20	40	60	120
up	min	min	min	min
80	74	66	62	48

Moderately black globe  
Minutes lasted 140  
J. F. Ott



Lamp 57

Mina Ediam  
Sept. 7/6

Unwashed lamp solution  
Tritate Antimony - impossible  
to get vacuum after 2 hours -

Acid

OK

Bursting - J. F. V. H.

Lamp 58

Mine Edison  
Sept. 9/86.

Unwashed Lamp. Solution  
Chlorate of Potash - Globe  
clean - one lamp black -  
Other not clean - Chlorate melted  
Come off hard - slight  
brown on globe near clamps  
One side filament browned  
near clamps -

8/24/86/ 40 58

T. Lamp - Res - Hlts - Lamp CR.  
101 - .70 - 144 - 3144 - 413 - 40 @ 16  
131 - 1.00 - 130 - 5751 - 5.74 - 457 @ 80

Set 20 00 140  
up - 40 - 28 - 30  
50 - 80 - 38 - 30  
40 - 38 - 30

at 50 min. deep blue  
on clamp - Arc'd in 180 min.

J. F. M.

Lamp 59

Maria Edison  
Sept. 9/86

Unvarnished Lamp - Solution  
Oxalate Copper - filament browned.  
Slightly on one side - burnt high for  
3/4 hour - globe clear. One clamp  
yellow like gold - other not very  
clear.

8/24/86 22% 09

Q - Lamp - Res - ~~filts~~ - Lamps CP  
180 - .79 - 127 - 3495 - 9.44 - 151 " 16  
130 - 1.12 - 116 - 6459 - 5.11 - 409 " 80

Set 20 80 80  
up - min - min - min -  
80 - 72 - 66 - 58

Arc'd in 125 minutes.

J F H

Lamp 60 Minia Edison  
 Sept. 9/86  
 Unwashed Lamp. solution  
 Cyoxide Copper. Glts burned  
 considerably hard to get off -  
 Spot in it - filament burned -  
 One side clamps clean.

8/24/86/ No. 60

F. Amp - Rec - Htts - Lamp C.P.  
 185 - .73 - 144 - 3400 - 9.70 - 185 " 16  
 137 - 1.65 - 130 - 6371 - 5.18 - 414 " 80

Set 20 50  
 up - min - min  
 80 - 72 - 58

No black or yellow - one  
 side filament moderately  
 shining -  
 Minutes lasted 50 -  
 J. F. Ott

Lamp No. 61

Mina Edison

Sept. 9/81.

Washed lamp - Solution  
 Sulphuric Calcium - Globe  
 clean - works well w pump -  
 filament slightly burned.  
 clamps black -

8/24/86/ No. 61

F - Amp. Res. Hts. - Lamp CP  
 153 - .73 - 141 - 3318 - 9.94 - 159 " 16  
 134 - 106 - 126 - 6282 - 6.26 - 420 " 80

Set - 20 80  
 up - min. min  
 80 - 84 - 72

Minutes lasted 120.

Globe slightly blackened -  
 clamps black - filament black -

J. F. Ott

Lamp No. 62

Wm. Edison  
Sept. 9/12

Unwashed Lamp - solution  
Permanganate Potassium -  
acid - small area formed  
in lamp before one jumped -  
Burned -

J. F. Ott

Lamp N<sup>o</sup> 63 g.s. 0th <sup>Wm. Edison</sup> Sept. 9/86  
 Unwashed Lamp - Solution  
 Ferri cyanide Potassium -  
 1/4 gramme.

Film filament - badly distorted  
 Little hard to get off - Pump  
 Globe slightly tinted - One side  
 filament burned -

8/24/86/ N<sup>o</sup> 63

4 - Lamp - Res. Hts - Lamp CP  
 96 - 70 - 137 - 2964 - 11.13 - 178 " 16  
 125 - 1.06 - 118 - 8884 - 5.61 - 449 - 80

Sit	20	100	250	350	460	530
up	min	min	min	min	min	min
50	72	40	36	32	22	24

980 1220  
 min - min  
 19 - 16

Minutes - lasted 14 75

Black globe, clamps usual amount  
 Case - filament dead black -

Lamp No. 64 J. S. H. Minia Edison  
Sept. 9/86

Solution Murashed Lamp -

" Iodide Potassium - Clamps  
clean - If salt heated will be  
Krusine lamp work off easy -  
Built clear filament - shining -

This lamp returned as 54 -  
There being two 54 - But think  
it is 64 - Not a bit of blackening

There is a light brownish coloration  
like the 52 hour 80 CP lamp -  
Filament black - Clamps moderately  
clean - This is on right track and  
probably due to free Iodine gone off  
when K<sub>2</sub>I heated -

8/24/86/ No 54 - Lamp CP  
9- Lamp - Res. Hts. H.R. @ CP  
97 - .78 - 124 - 3362 - 9.82 - 157 " 16  
127 - 171 - 115 - 6238 - 5.29 - 423 " 80

Set 20 - 50 - 140 - 261 - 570 - 740 - 890  
up min - - - - -  
80 - 80 - 72 - 64 - 56 - 48 - 45 - 44

Minister lasted 1060



Lamp No. 65 J. S. O. M. M. E. Edison  
Sept. 9/86

Nothing in globe put on pump  
when there are 2 milligram  
of Iodine in Phos. bulb.  
Hg blue in globe - Iodine  
partially got covered up - Globe  
clear, clamps rather clean -  
filament little darkened -

8/25/86/ No. 65.

T - Amp - Res - Hts - Lamp. C.P. H.P. - H.P. @ C.P.  
108 - .72 - 150 - 3445 - 9.59 - 13.3412  
109 - 1.04 - 134 - 6400 - 5.15 - 412.1150

Let 40 110  
up min - min -  
80 92 - 70

Minutes lasted 130

Globe more than ordinary  
black - Did not get water out  
Ignas -

(174)

Lamp No 66

Miss Edison  
Sept. 9/86.

Acetate Lead no good  
too much water bursted in  
pump -  
J. F. Wtts

Lamp No 67

Union Edison

Sept 9/86

Murashed lamp -

Solution Arsenias Potash -

Bulb tinted - Filament black-  
most blackened yet white  
in pump - hard to get off -

8/25/86

No. 67

9 - Amp - Res - 41 lbs - <sup>Lamp CP</sup>  
 107 - 78 - 138 - 3700 - 8.92-143 "16  
 128 - 1.14 - 12.1 - 6970 - 4.72-378.80

Set 40 130  
 up - min - min  
 80 - 82 - 56

Unimts lasted 130

Blackened about equal  
 filament dead black -

J. F. Ott

Lamp No 68

Wm. Edison

Sept. 9/86

Unwashed Lamp - Solution

Trugetate Soda - Bulb clear.

Carbon shining - Comes off easy  
clamps clean -

8/25/86/ No 68

T- Amp - Res - Htts. Lamp C19  
140 - .72 - 139 - 3190 - 10.35 - 166 - 16  
130 - 1.02 - 128 - 5870 - 5.02 - 440 - 80

lit 40 120 300 480 690 900 1130  
up. min - min - min - min - min - min - min  
80 - 72 - 56 - 48 - 42 - 36 - 34 - 32

Minutes lasted - 1190

Lamps about regular black

clamps clean

Filament dead black -

Y. S. M.

Lamp No 69

Wm. Edison  
Sept. 9/86.

Unwashed lamp -  
Solution Nitroquarsside Sodium  
slightly little tinted - filament  
not perfectly shining -

8/25/86/ No 69

9- Lamp - Res - Hts - <sup>Lamp C.P.</sup>  
#100 - #110 @ C.P.  
106 - .76 - 140 - 3575 - 9.25 - 148 - 16  
137 - 1.10 - 125 - 6675 - 4.94 - 395 - 80

Set 40 130

up - min - min -

80 - 80 - 58

Minutes lasted 1.50

More than regular

Flackening - clamps clean -

J. F. V. H.

(172)

Lamp N<sup>o</sup>. 70

Wm. Edison

Sept. 9/86

J. S. Ditt

Unwashed Lamp

Solution - Mercuric oxide

Acid on pump -

Lamp No. 71

Wm. Edison

J. F. Ott

Sept 30/86

Dried on drier with heat then  
 taken off and a solution say 20  
 drops of Gasoline with Iodine  
 dissolved in it. Poured in lamp  
 white hot and put out burner -  
 It worked very easy, scarcely any  
 air came off. Got a vacuum in  
 a few minutes, but upon allowing  
 it to turn vacuum air came  
 out. Also noticed a faint blue  
 halo on clamps although the  
 globe was white and free from  
 blue. Strange to say while the  
 globe is white at high CP. the blue  
 halo shows much stronger. Maybe  
 decomposition of iodide of Mercury  
 decomposed & then recombined.  
 Clamps gradually become clean  
 showing either H. or Co. Blue  
 in globe. Clamps clean, filament  
 shining, Burn burning  $2\frac{1}{2}$  hours  
 at 30 candles. Slight dimming of  
 globe - The glass is not perfect  
 on filament but small

Lamp No 71

Mica Edison

J. S. 1888

8/26/86

W. - Cmp.	Res.	Hlts.	Lamp #1	CP #1	@ CP.
96 - .78	-	124 - 3325	-	9.93	- 159 " 16
125 - 1.09	-	115 - 6050	-	8.45	- 436 " 80

Lit - 30 60  
 up - min. min  
 80 - 78 - 72

Munitions tested 200.

Globe black more than usual for  
 this life - One side of filament brown  
 other dead black - Clamps clean -



Lamp 72

Mina M. Edin  
Sept. 20/86.

Bichromate Ammonia - Bulb clear  
impossible to get rid of air - Salt  
smells up enormously & continuously  
give off air - Filament dead black  
burned  $\frac{3}{4}$  hours on pump -

8/25/86/ No 72

F. Lamp - Res - fthts - Lamp CP  
11 - .81 - 137 - 3990 - 4.13 HR @ CP  
142 - 1.12 - 127 - 7050 - 8.27 - 132 " 16  
4.68 - 374 " 80

Set - 60  
up - min  
88 - 80

Minutes lasted 110

Lamp ordinary blackened bulb.

Lamp N<sup>o</sup> 73

Mina M. Edison

Sept. 20/86

Unwashed Lamp -

J. F. G.

Lamp black - Comes off very easy  
 Clamps moderately clean -  
 Filament shining - Globe tinted  
 a little probably from lamp black.  
 Little yellow in the narrow part of  
 the globe probably a Hydro carbon  
 from Lamp black.

8/20/86

9- Amp - Res. -  $\frac{1}{2}$  lbs - Lamp CP  
 #15 - #17 @ CP  
 100 - .78 - 129 - 3465 - 9.53 - 153 " 16  
 130 - 1.10 - 118 - 6350 - 5.20 - 416 " 80

Set	40	130	300	450	690	950	1130
up - min	min	min	min	min	min	min	min
80 -	74 -	56 -	52 -	46 -	38 -	37 -	38

1600	1960	2190	2490	2685	3380	3610
min -	min -	min -	min -	min -	min -	min
31 -	30 -	28 -	26 -	25 -	23 -	21

Minutes lasted 3785

Pretty black. Clamps not very clean.  
 The black has a yellowish caste.  
 Think a great deal of it due to  
 dirty effect of movement of the loose  
 Lamp black. Vacuum good.

Lamp 74

Wm. H. Edison  
J. F. M. Sept. 20/86

Unwashed lamp. Carbonate  
of lead put in globe. Almost im-  
possible to get vacuum - Lamp  
soon clear - clamps clean - filament  
black

8/20/86/

F. Amp - Res. Hlbs - Lamp CP.  
128 - .63 - 203 - 3575 - 9.23 - 148 " 16  
149 - .78 - 192 - 3750 - 6.41 - 256 " 40

Set 40 130 300 450  
up - min - min - min - min  
40 - 44 - 46 - 40 - 36

Minutes tested 540

Less black than ordinary -  
white in spots, clamps clean.

Lamp no 75

Minia M. Edison  
J. 5th Sept. 20/86

Unwashed Lamp - Lead Chloride.  
Iridescent, works well on pumps  
very little of any Hg Hue - Globe  
whitened some what - Clamps clean  
shinest apparently shining both  
sides

8/20/86

F. - Amp - Res - Htts - Lamp CR  
113 - .71 - 159 - 3550 - 4.41 - 4.12 @ CR  
149 - 1.04 - 144 - 6865 - 4.81 - 385 " 80

Set - 40 - 10

up - min - min -

80 - 74 - 66

Iridescent  
not much blackening

Minister lasted 85.

Lamp No 76

Wm. H. Edwards  
J. F. D. H. Sept. 20/86

Unwashed and undried lamp  
about 10 C 15 - Mulligraue Bromide  
Potassium - Scarcely any blue -  
Slight blue halo - Scarcely any air  
works off easily. Globe faintly  
opalescent - Clamps clear -  
filament shining -

8/27/86/

T - Lamp - Res - Hts - Lamp CP  
Hts - HR @ CP  
108 - .78 - 144 - 3600 - 9.17 - 144 " 16  
140 - 1.08 - 136 - 6700 - 4.92 - 394 " 80

Set 40 90  
up - min - min  
80 - 76 - .66

Minutes lasted 190

Black globe, clamps clear,  
filament dead black -

Lamp No 77

Minia M. Edison  
J. F. M. Sept. 20/86

Working in lamp - two pumps with  
2 grammes - Sodium right on top  
Phosphoric anhydride - Cup no  
blue in globe. Little whitened near  
clamps - Clamps showed tendency  
to melt - Pump filament way up above  
regular - Clamps not clean - Filament  
perfectly shining. Works off easy. No  
air or at least hardly any, after a  
red heat and then very little:

8/20/86/

7 - Lamp - Res - Filts - Lamp CP  
102 - 74 - 138 - 3350 - 9.85 - 158 " 16  
132 - 1.13 - 127 - 6025 - 5.48 - 438 " 80

Set	40	110	260	500	760
up - min -	min -	min -	min -	min -	min
80 -	80 -	74 -	64 -	44 -	38

Minutes tested 820.

Bronnish black about regular amount.  
Lamps slightly dirty - Filament bright  
from clamp to  $\frac{1}{2}$  inch up on the  
side that broke.

Lamp 78 J. S. Edson  
Sept. 20/86

Nothing in globe but there are about  
5 milligram of iodine in among the  
Phos. Anhydride in cup. Want to  
see if lamp get blue - Lamp free  
of blue - Wakes off beautifullly, hardly  
any air - Clamps dull brown -  
filament shining -

8/25/86

X - Lamp - Res. - Filts. - Lamp CP  
100 - .50 - 125 - 3550 - 440 - 440 @ 100  
130 - 1.14 - 114 - 6450 - 5.12 - 410 - 80

Set	40	110	260	500	760	940
up - min.	min.	min.	min.	min.	min.	min.
80	76	64	52	43	40	38

Minister lasted 1325

Globe rather black - Air clamps  
clean other Carbon black - Filament  
dead black -

Lamp 79.

J. S. 1886

Wm. M. Edison  
Sept. 20/86

Unrashed lamp. Filament  
Potash - Blt clean - clamps clean -  
Filament very slightly browned some  
part one side only. Burned high for  
over 1/2 hour.

Globe not nearly as black as it <sup>usually</sup> is  
for this light - Filament dead  
black - Clamps clean -

8/25/86/

7- Lamp - Res - Filts - Lamp - CP  
+ P. - + P. @ CP.  
98- .80 - 123 - 3475 - 9.50 - 152 " 16.  
124 - 1.14 - 111 - 6375 - 5.18 - 414 " 80

Lt - Co 230 380 620 880 1060 1630  
up - min - min - min - min - min - min - min  
80 - 80 - 64 - 52 - 42 - 41 - 34 - 32

Wintia lasted 1930  
Quite black - Filament dead black -  
clamps clean -



(201)

Lamp 80 -

Wm. A. Edison

Sulphate Ammonia  
Too much water in it.

**Lamp Factory Notebook, N-86-08-24**

This notebook covers the period August-December 1886. The entries are by Edison and John F. Ott. The book contains notes and drawings relating to the design of the municipal lamp, apparatus for carbonizing and bulb blowing, and the phonoplex. The spine is labeled "32." The book contains 20 numbered pages followed by 17 unnumbered pages. There is also one unnumbered page at the beginning of the book.

Aug. 24 86  
T.C.

Made clamp of Copper  
to hold filaments, open on  
one side, then soldered  
them by means of this etc,  
using Copper, Iron, Nickel  
Zinc, Tin, Lead, Magnesium,  
in solder, as one told  
Also used various salts,  
Boric acid, Naptline,  
Kerosene, Carbon Bisulphide,  
Oxide Copper, mixed with  
lamp black,  
Oxide Nickel mixed with  
lamp black,

Aug 27 86<sup>1</sup>

Soldered Carbon filaments  
in clamps with Iron  
Pyrites J<sup>a</sup>

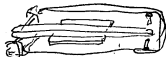
Phonoplex

2

Sep 8 86

J. F. O'Keefe

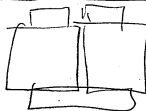
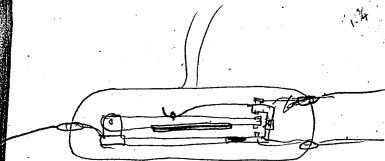
Ta



3/16

3/16

1 1/4



1

anhydrous  
 Boric acid  
 spring clamp



2

Embroid

Sep 10 86

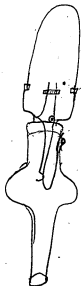
J. S. Ott  
 TAE

The wires to  
 be plated on  
 same time the  
 carbon is plated  
 on and cover  
 them with rubber  
 tubing

2

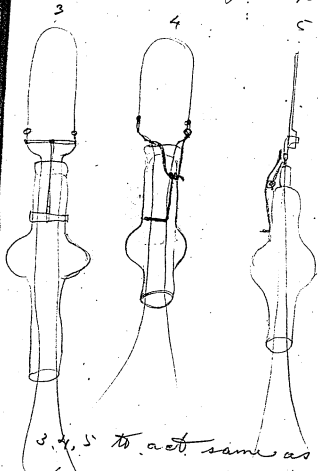
3  
Sep 10 86J. F. Otto  
Tas

To be bound  
with high resist-  
ance compound  
that will fuse  
under 1000 volts  
and allow spring  
to close circuit



Sep 12 86

J. F. Oth<sup>4</sup>  
Tal.



3, 4, 5 to act same as  
No. 1.



J. S. O. Co

Tar

Sep 12 86

5

These were measured in a platform  
scale  $\frac{1}{16}$  diam  $\frac{1}{16}$  in depth

Tested different materials  
oxides and salts

Black oxide Copper over 100,000

Bismuth Trioxide — 100.000

Antimony Oxide — over 200,000

Cadmium Oxide — over 200,000

Zinc Oxide — over 200,000

Manganese Peroxide — over 400,000

Measured untreated Coal before  
Carbonizing — 2,000,000

After heating — 2,04

Charcoal before heating 100,000

After heating with blow  
pipe — 35

J. F. O'K. Sep 14 : 86  
Tae

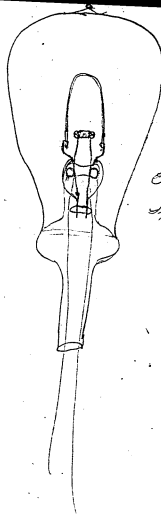
Tested different substance  
for conductivity, to be  
used in Mississippi Lamp,  
Carbonized Charcoal treated  
with hydrocarbon deposit  
Piece  $\frac{1}{8}$  thick  $\frac{1}{4}$  square Ohms  
1  $\frac{1}{4}$

Carbonized two moulds  
Anthracite coal,

Heated one mould to red  
heat then taken it out,  
this coal measured 21,000 Ohms

The other the same heat  
and left in twenty minutes  
then taken out

This measured 500 Ohms



4  
Sep 16. 86

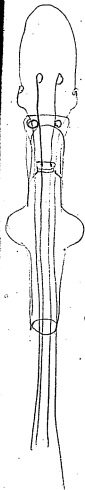
J. F. W.  
T&E

Cool  
Carbon  
Spring clamp

1 Sep 16. 86

8

~~J. F. C. H. 2~~  
Tae



Spring  
clamp



Sept 16 80

J. F. O'K  
Tae

9

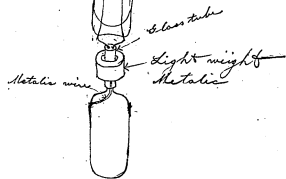


Sep 11. 86

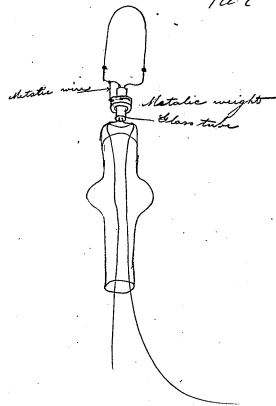
TaE

J. F. Ott

10



11  
Sep 17.86 J. F. Ott  
Tae



12

J. F. O'H  
TaE  
Sep. 18. 86

Made small cups on  
end of double barl tube  
ran two wires through them  
filled them with the  
following compounds and  
measured resistance

Copper Oxide	1 Gram	
Lamp black recarb	$\frac{1}{2}$ - "	Ohms 30

Copper Oxide	1 Gram	
Lamp black recarb	$\frac{1}{4}$ "	Ohms 46

Copper Oxide	2 Grams	
Lamp black recarb	$\frac{1}{4}$ "	Ohms 3,900

Copper Oxide	3 Grams	
Lamp black	$\frac{1}{4}$ "	Ohms 300,000



J. F. O'Hara Sep 18 86 13  
TAE

Copper Oxide 2 Gram Resist  
Petroleum Coke Carbon  $1\frac{1}{4}$  G. Ohms 6,900

Copper Oxide 2 Gram Ohms  
Petroleum Coke Carb 1 G 21,000  
Packed it is lower according to  
Resistance

Sep 20 86

Shred Copper Oxide with water  
packed in small cup on end  
of double barrel tube, and  
measured resistance

Ohms  
dry 300,000  
Worked with Wet 10,000

9 J.F.O. T&E Sep 20 86 174

Copper Oxide 1 Gram

P. E. Carbon  $\frac{1}{4}$  " Ohms

Worked well Wet 4,400

Dry 211,000

10 Copper Oxide 1 Gram

P. E. Carbon  $\frac{1}{2}$  " Ohms

No Good " Wet 200

Dry 1,400

Copper Oxide 1 part

P. E. Carbon  $\frac{5}{8}$  " "

No Good

Wet Ohms 5,400

Dry 7,600

14 Copper Oxide 1 Gram

Bismuth Subcarbonate  $\frac{1}{4}$  "

This worked fair

13 J. S. P. 108 Feb 20, 86 15-  
Copper Oxide 1 Gram  
Niccol Carbonate  $\frac{1}{4}$   
This worked fair

14 Copper Oxide 1 Gram  
Lead Carbonate  $\frac{1}{2}$  1 Ohms  
~~250,000~~

13 Chromate Lead 1 Gram  
P. C. Carbon  $\frac{1}{4}$  " Ohms  
Left circuit open 5 seconds  
then fused 250,000

14 Red Lead 1 Gram  
P. C. Carbon  $\frac{1}{4}$  " Ohms  
Left circuit open 8 seconds 250,000  
then fused

11 Red Lead 1 Gram  
P. C. Carbon  $\frac{1}{2}$  Ohms  
Made lamp dip, and 900  
spatuled a great deal then fused.

12 Chromate of Lead 1 Gram <sup>16</sup>  
 P. B. Carb <sup>J.F.O.</sup>  
 No good  $\frac{1}{2}$  " Chrom  
 15.

10 Copper oxide 1 Gram  
 Chromate Lead 1 " <sup>to low insult</sup>  
 P. B. Carb  $\frac{1}{2}$  " <sup>a short insult</sup>  
 110

9 Copper oxide 1 Gram  
 Red Lead 1 <sup>Red Lead</sup>  
 P. B. Carb  $\frac{1}{2}$  <sup>dit</sup> Chrom  
 250,000

As 8 same as 9 only dry Chrom  
 Worked but made 250,000  
 lamps dim and spotted  
 a great deal.

Made double barrel tube with  
 cap on end, filled with Copper  
 oxide and carbon fused top  
 shut with anhydrous Boric  
 Acid

1

Mixed Copper Oxide <sup>2.50 14</sup>  
 L. B. Carbon. <sup>100</sup> 3 Grams

put in cup <sup>1</sup> <sup>1/4</sup> Resist

This dried in 100 Volts, but  
 not enough to start lamp, when  
 in tube to lamp

Made same solution wet

Dried in Bunsen burner measured 350

The same Dried in drying oven  
 before sealing

dried on 100 Volts, when <sup>Ohms 7300</sup>  
 dried through tube

Mixed Copper Oxide 5 Grams  
 L. B. Carbon

put in cup dried in dryer <sup>1/4</sup>

This dried to lamp <sup>Ohms</sup>  
 did not arc with lamp <sup>30,000</sup>  
 in tube arc

5X 1/4 mixture, made two.  
 one measured this ran through tube <sup>20,800</sup>

the other this worked  
 very well <sup>34,000</sup>

5 x  $\frac{1}{4}$  Mixture

J. 5. 0. 18  
Tel

$\frac{1}{4}$  P. C. Carb wet dried  
in dryer measured resistance

~~checked the inside parts~~  
One measured Ohms — 280,000

~~The other~~  
~~this dried through tube down & 120,000~~  
~~inside parts~~

5 x  $\frac{1}{4}$  Mixture

$\frac{1}{4}$  P. C. Carb wet with:  
Licorice water

Resist — Ohms 1350

~~this dried on 100 Volts & broke down~~  
~~checked the inside parts~~

5 x  $\frac{1}{4}$  Mixture

with Licorice water  
dried just out lamp two seconds  
then came up again, & ~~checked~~ Ohms 580  
~~line checked the inside parts~~

1. <sup>g. 5.0</sup> Sep 22 19 86  
Copper Oxide 5 Grams Tol  
L B Carb —  $\frac{1}{4}$  " "  
Sum Sandarach

2 Copper Oxide 5 g.  
Lamp Black  $\frac{1}{4}$   
Sum Sandarach over 200,000  
Ohms

3 Copper Oxide 5 g.  
L B  
Sum Sandarach  $\frac{1}{4}$  After heating 4,100  
Over 200,000

4 Copper Oxide 5 g.  
L B  $\frac{1}{4}$  34,000  
Sum Dragontite  $\frac{1}{4}$  40,000

5 same resistance After heating 40,000  
22,200

2.5.86 20  
Made glass cup in place  
of double tube having  
poles spread at bottom  
to prevent arcs at that end  
and make them arcs nearest  
the carbon

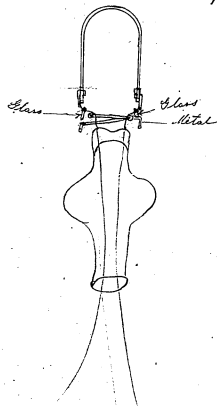
Sep. 22, 86





Sept, 22, 86

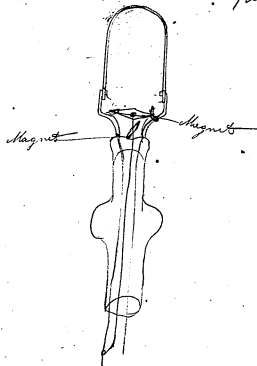
J. F. O'H  
To 9



Sept 22, 86

215.0

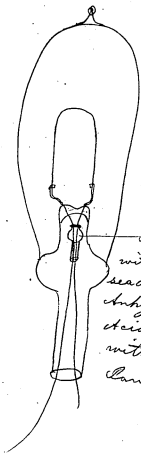
Ta8



Sep. 22. 80

J. F. V. H.

Tar.

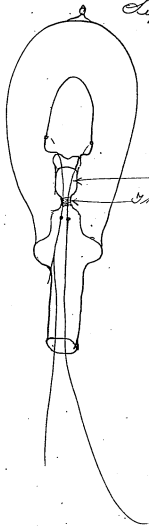


To be filled  
with Copper Oxide  
sealed with  
Anhydrous Boric  
acid, also  
with Plaster  
Paris

Sep 27 86

J.F.O

Tal



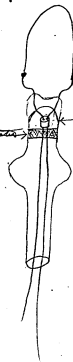
(filled

this to be)

this noted

Sep 29. 86

J.F.O.  
TAE



One layer Plaster  
Paris

This space to be filled  
with Cotton Wool  
and carbon

Sep 29. 86

J. F. Ott

T&E

Thread saturated  
with carbon

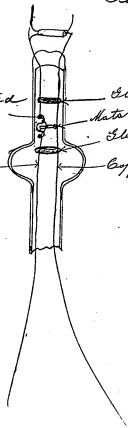
Copper wire

Glass

Natalie hinge

Glass

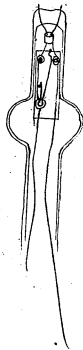
Copper wire



Sep 30 86

J. F. Otto

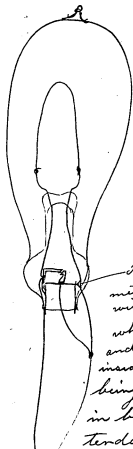
Ta9



Sep 30, 86

J. F. O'H

T. O. R



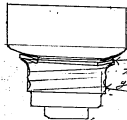
Rubber or  
metal diaphragm  
with hook catch  
when lamp dies  
and burns through  
waxen part, then  
being a vacuum  
in bulb the  
tendency is to  
draw the diaphragm  
in and hook will catch  
and short circuit the  
thus establishing the line



Sep 30 1896

J. F. O'H.

Tag



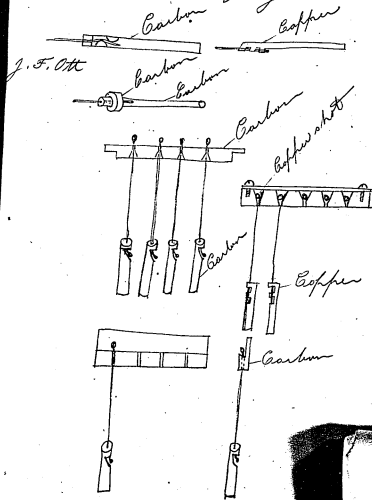
Brass thimble

Leather washers

this is to prevent noise  
getting to the  
Brass screw

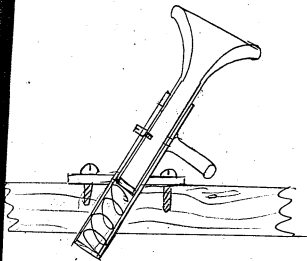
Nov 10 86

Clamps for holding round  
fibers for carbonizing



J. F. O'H

Nov 17 86

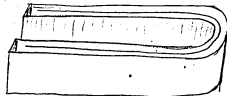


Valve for blowing  
bulbs

Nov 23 86

Hold for Carbonizing

J. F. Otto



Filled with Anthracite

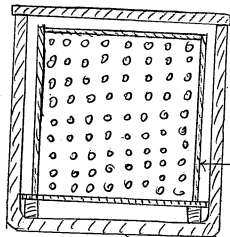


Lid

Nov 23, 86

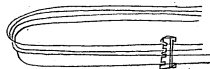
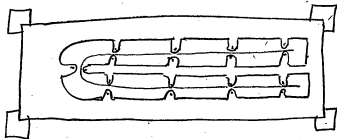
Carbon moulds

J. F. Ott



Nov 23 86  
J. F. Ott

Form for printing  
in Carbons into mould



Copper



Carbon

Compound for making  
Threads for cut out and  
Municipal Lamp

20 C C Lamps

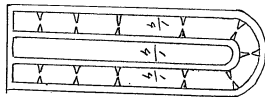
1 B. Asfalt

3 S. Eddys Lamp Black

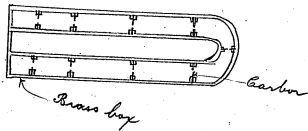
$\frac{3}{8}$  S. Gel Lamp Black

Dec 22. 86

J. F. O'H



Small pieces of Carbon  
Stuck on inside of Carbon  
Mould with Spanish licorice  
to keep fillement in cent  
then fill in with coal

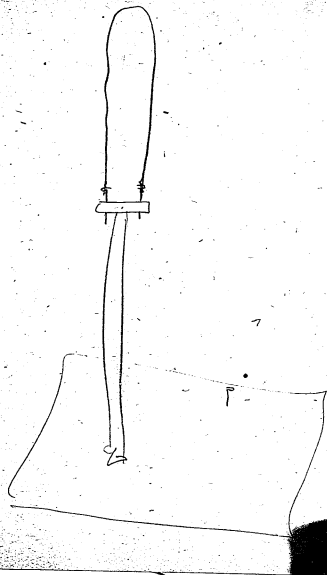


This prevents the metal from  
coming in contact with fillement  
~~in contact with fillement would cause~~



it to carbonize sooner than  
where it not in contact



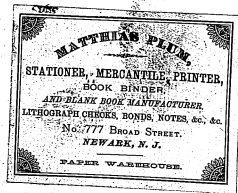


Lamp Factory Notebook, N-86-08-25

This notebook covers the period August-October 1886. Most of the entries are by Ezra T. Gilliland. There is also one entry by Edison about telephone experiments. The notes and drawings by Gilliland concern telephones, a railway telegraph and telephone, and phonograph experiments. Included also is a set of undated drawings, probably by John F. Ott, for a village system generator. The spine is labeled "31." The book has been used in both directions. At one end of the book are 50 numbered pages preceded by one unnumbered page. The six pages of entries at the other end of the book are unnumbered.

Blank pages not filmed: 27-50.

N-86-08-25



August 25 1886.

J. S. M.

Telephone Experiments

Try in telephone powdered -

Platinized light charcoal -

Silver plated

Silicon ✓

Tellurium ✓

Sulphide lead -

" Iron  
Tin

Calcopyrites,

Following is  
Ezra T. Gilliland's  
writing.

See also Pg. 18.

N.R. Spence

Page 1

Wednesday Aug 25<sup>th</sup> 1886

J. S. D. O.

Silicon in the L.D. transmitter<sup>no 1</sup>  
shows my high resistance, first  
that get no results - measures  
1800-ohms - Heated the silicon  
on short iron pan to dry it  
and burn off any organic  
matter that may have been  
in it and get a better result,  
with <sup>(4)</sup>four cups Carbon battery  
it talks about  $\frac{1}{2}$  to  $\frac{1}{2}$  as  
loud as a hand telephone -  
measured 10,000-ohms -  
One pyrites - in no 1  
L.D. talks about  $\frac{1}{2}$  as good  
as Carbon - washed it in  
nitric acid improved it a very little

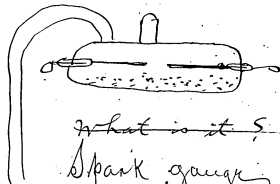
Continued from page 1 - Page 2  
measured ohms - J. F. H.

Antimony in #1 LD produced  
very little results about  $\frac{1}{2}$  as  
good as a hard telephone  
Resistance very low about .01 ohms

Alloy of antimony potas  
Talks about as loud as a  
hard telephone Resistance  
very high -

Cocoa nut Carbon -  
on first test seems to work  
better than regular anthracite  
Carbon It is much lighter  
than anthracite carbon and  
instrument has better microphonic

J. S. 1916



~~What is it?~~  
Spark gauge

Continued from Page 2 4

-microphonic qualities - J. 5.000

Thursday Aug. 26<sup>th</sup> 1886

Continue Cocoa Carbon -  
Experiments -

Comparative weight of anthracite  
Carbon & Cocoa Carbon, the  
Cocoa weighs a little more  
than one half as much -

Macaroni Carbon weighs about  
 $\frac{1}{2}$  as much as as Cocoa  
and ticks about the same  
both Cocoa & macaroni  
tick loud but do not  
articulate as well as  
anthracite. Treated the macaroni  
Carbon with sulphuric acid  
and washed and cleaned it -



Continued from page 46. 5  
J. S. 1886

cleaned it, which produced a  
slight improvement - not equal  
to the standard Carbon -

Third Experiment of shooting  
primary; <sup>secondary</sup> coil with 6 large  
hydrogen jars no perceptible  
improvement -

Shunts coil with Condenser,  
no improvement -

Third Zinc dust no  
results - resistance very  
high =

~~—————~~

all of the above Experiments  
have been tried on short  
circuit - now preparing artificial  
line upon which Experiments will  
be tried hereafter -

Continued from page 5

6

<sup>J. S. Watts</sup>  
Tellurium - Talks nearly as  
well as Standard Carbon  
it has low resistance  
is about ~~2 1/2~~  $3\frac{1}{2}$  times as  
heavy as Carbon -

This is by far the best  
talking substance we have tried  
yet and comes the nearest to  
Standard Carbon will make  
further experiments with  
other apparatus -

Page 7

Friday Aug 27/86

J. S. G. H.

manganese peroxide -  
no results -

granulated Zinc no results

Zinc is very heavy and  
poor conductor. treated Zinc  
with sulphuric acid improved  
its conductivity somewhat but  
not its talking qualities -

Tried regular standard  
Carbon with platinum  
scrap clippings mixed in  
got good results talked  
as well as standard  
transmitter

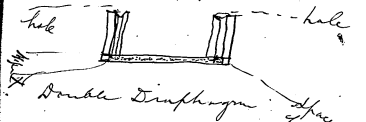
Lignovise Carbon J. S. 205  
 made fine domestic  
 Lignovise gave medium  
 results talked about one  
 half as well as standard

Third standard Carbon with  
 platinum disc float  
 in chamber no improvement  
 used dozen different  
 sizes and shaped floats -

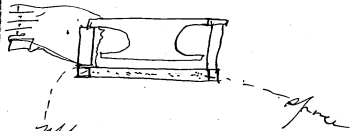


Float

9  
Saturday Aug 28<sup>th</sup> - 9.5.26



Works good but  
no better than standard

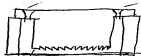


upper diaphragm (connected)  
with upper electrode -

works very well but no  
better than standard

Continued from page 9 -

10



Rule for filling  
p. 5. 10th

Corrugated electrode the object  
being to prevent the ~~the~~ granulated  
material from creeping away  
from the center of the diaphragm -

This worked splendidly and is  
very decidedly an improvement  
upon the regular standard form -  
further experiments will be made  
and a test that will be made to  
determine its staying qualities -  
its holding qualities are  
superior (as far our tests  
have gone -

Used powdered Feldspar  
xxx coated with plumbago

Continued from page 10 . 11  
J. S. 105

no results - Third says could  
with plumbago. ticks about  
same as a hand telephone -

Wednesday Sept 1<sup>st</sup> 1886

made series of tests to  
determine lasting qualities of  
the new corrugated form of  
Electrode found that it was  
somewhat longer and come  
down near the Diaphragm  
which partly accounted for  
its increased loudness  
in test experiments -

It shows a marked  
improvement however -

Carbon made from vegetable  
Ivory works about as well as

J. S. 1886 <sup>12</sup>

regular standard carbon

It is about as clean but  
not quite so bright  
weights

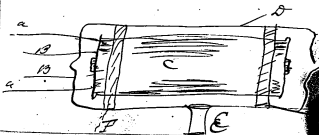
Thursday Sept 2 1886

Tested carbon made of pitch  
tells about same as hard  
telephone is very light so  
much so then when cap is  
removed from top of transmitter  
and when speaking in a loud  
tone of voice the carbon  
mice pour out of the holes in  
the Electrode rising up  $\frac{1}{2}$   
 $\frac{1}{2}$  of an inch like water  
out of a fountain we feel



Continued from page 12  
J. S. 1000 13  
well convinced that light carbon  
is not as good as the heavier  
or at least heavy enough to  
fall back into position as  
to respond to rapid vibrations  
and ~~be~~ <sup>not</sup> be thrown up and  
held suspended in space =  
heated carbon made from  
impure lignosize slight  
improvement over domestic  
lignosize but not does  
not compare to standard  
Carbon -

Cell in Vacuum -



Continued from page 13

J. F. Ott  
Description arrangement of coil  
in vacuum shown on  
page 13

a a ~~primary~~ <sup>secondary</sup> connections  
or leading in wires of primary  
circuit of coil -

B B ditto for primary

C - coil

D Glass tube

F F Hard rubber rings  
to hold coil in  
position in tube -

E opening in coil  
for exhausting the air -

15  
The quality of anthracite <sup>carbon</sup> ~~used~~ <sup>used</sup> ~~made~~ <sup>made</sup>  
heretofore has ~~J. S. Allen~~

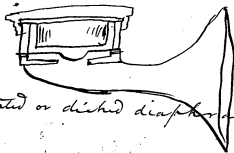
The quality of the anthracite  
coal used to make the  
Standard Telephone <sup>Manufactured</sup> Carbon  
has been poor having  
been taken from the supply  
of coal furnished for  
steam purposes -

Suggest procuring of highest  
quality of anthracite coal  
let it be hard and  
glossy and free from  
the quality of carbon will  
be greatly improved

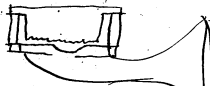
Friday Sept 30 1886 -

16

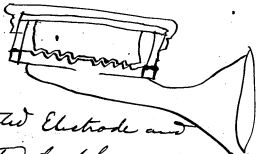
J. F. Cobb



Corrugated or dished diaphragm



Corrugated Electrode dished diaphragm



Corrugated Electrode and  
Corrugated diaphragm  
Corrugations made to Ampere

Sept 30th 1886

17

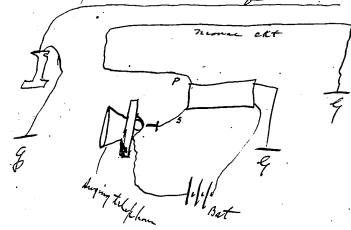
Railway T & T Experiment.

Set up and tested the

Edison arrangement of  
using a singing telephone  
with cushion contact as a  
substitute for the automatic  
vibrator - It worked first  
class - another was made  
and forwarded to Budd  
for practical test on  
the train on Chi & P  
& Mil RR. This  
device was made and

Continued from page 17 18

Set up as shown in the  
following sketches—



Exp 9

Sept October 5<sup>th</sup> 1886 <sup>19</sup>

Commenced work on the standard  
Phonograph - Plan is to make  
a small compact instrument  
suitable for office use. It is not  
expected that it will talk loud but  
is to be made to be heard to the  
listeners ear like a  
telephone and to be made  
to talk about as loud  
and clear as a good  
telephone on a short circuit -



Is to be driven by a small  
motor, probably an electrical motor,  
and so made that it can be  
readily stopped and started

Continued from page 19 20

and started and backed up or  
reversed or set back - motors to  
be arranged to run as near as  
possible a uniform speed  
and have a simple or convenient  
regulating device to control  
speed.

The greatest height of perfection  
will be to make cylinders or  
or plates containing the record  
interchangeable, i.e. a talking  
record made in one machine to be  
transferred and reproduced in  
another machine - although  
the machine will have great  
commercial value ~~even~~ if this  
cannot be accomplished -



Continued from page 20 21

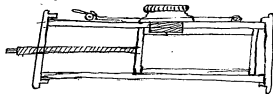
The cylinder should be about ~~two~~  
1 inch to  $1\frac{1}{2}$  inches in diameter  
made of glass or polished steel  
should be about 4 or 5 inches in  
length and have 40 to 50 threads  
to the inch this will give it a  
Capacity of about 10,000 words based  
on  $1\frac{1}{2}$  diameter or 5 in circumference  
50 threads to inch would be 250 miles  
to inch of cylinder in length. 5 in  
long would give ~~the~~ 1,250,000 inches  
to the cylinder with say about 8 to 10  
words to the inch or 10,000 words  
to the cylinder - I believe that  
diaphragms and needles or points  
can be made ~~as~~ as cheap and  
simple that they can always  
be a part of the cylinder

and removed from the machine with the cylinder and thereby accomplished interchangeability, as there is no difficulty in repeating many times the record made if the point and diaphragm are not disturbed. a cylinder its thread and diaphragm & point can be the detachable portion of a machine, and the running gear and motor and all other parts can be contained in the stationary part or balance of the mechanism. The motor should be connected through the medium of a flexible shaft to prevent the buzz or jar being communicated to the Phonograph. This will also make the apparatus more

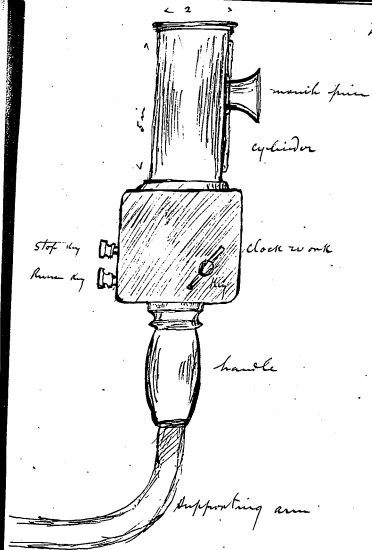
Comment to me providing it  
 is made a size that will admit  
 of its being held to the ear to  
 listen and to the mouth to talk  
 to it, in case it cannot be  
 made light enough to admit of  
 this then a flexible speaking  
 tube can be used for talking  
 into and listening, in this event the  
 jarring sound of the motor will  
 not be as likely to interfere -

The cylinder should be made  
 of polished glass or metal and  
 the substance that receives the  
 sound or vibration should be either  
 a shellac, gum or wax or something  
 of that nature which can be  
 applied with a brush or by dipping  
 into a liquid solution and allowing  
 it to dry on and can be

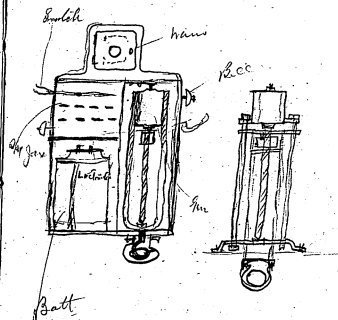
discolored off and thereby prevent  
any scratching or injury to the  
cylinder and be cheap and require  
no special skill or devices to  
accomplish this most important  
part of the work - Gums or  
shellacs or substances of that  
nature will be less likely to produce  
the scratching sound which has been  
such a serious trouble in the use  
of tin foil. If the diaphragm  
& needles are made to always be  
kept together then the cylinder  
can be prepared by the Phonograph  
Company or <sup>their</sup> experts and furnished to  
the customers and a rental charged  
and a continuous revenue derived -

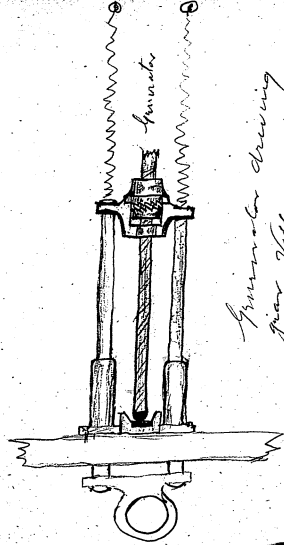


Show for cylinder drop frame and  
 point screw and bearings to always  
 to kept together end of screw  
 has square or other means of  
 connecting it to the motor -  
 the cylinder gets its bearing on a  
 rim or flange located at each end  
 which is made to exactly fit the  
 bore of the casting which  
 holds the mouth piece - The mouth  
 piece is made to adjust by  
 revolving it is also fitted with  
 a device for lifting it when cylinder  
 is to be cut back to ~~starting~~ point



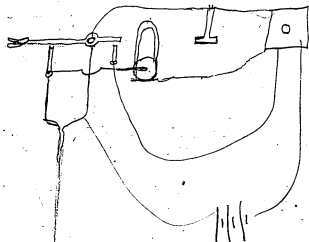
# Valligat System



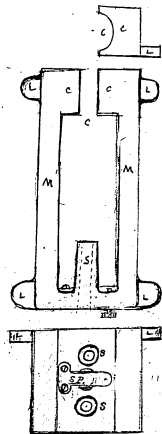


gun driving  
gear through system  
in Rucers and frame  
apud -





Constructions Velling  
System

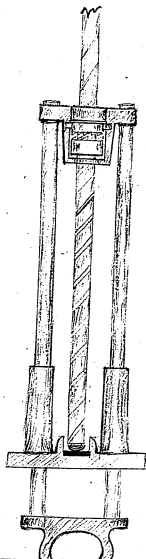


C cylinder  
 MM magnet  
 SS stator  
 ST stator  
 L Lugs

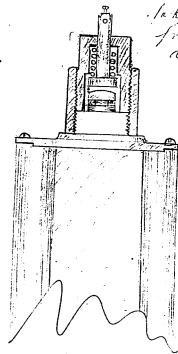
S.P. phosphor  
 large spring for  
 stator and automatic

Generator Frame  
 of Cast Iron

Generator having  
gear worm  
and free wheel



Cylinder head  
of generator showing  
arrangement for  
taking current  
from end of  
armature.



Lamp Factory Notebook, N-86-10-05

This notebook covers the period October 1886. The entries are by an unknown laboratory assistant and relate to carbonization experiments for lamp filaments. The experiments are numbered 1 through 11. The spine is labeled "33." The book is unpaginated.

Experiments on Carbonizing in  
sealed tube.

Exp. 1<sup>o</sup> 1:- Bamboo splint in sealed  
tube in  $H_2O$  colored with Aniline Violet.  
@ temperature of  $300^{\circ}$  Fahr. (gradual rise).  
Carbonizing imperfect; - color penetrated  
about  $\frac{1}{8}$  through the splint.

Oct. 5<sup>th</sup> 1886. Object - to drive  
the color through the filament.

Exp. No. 2. - Same conditions as  
No. 1 - - temperature  $70^{\circ}$  Fahr. (gradual rise)  
Carbonization complete.

Oct. 6<sup>th</sup> 1886.

Oct - 7<sup>th</sup> 86  
Exp. N<sup>o</sup> 3. One neg. A. Fiber in sealed  
tube, in coal-tar, raised to a temp.  
of 700° Fahr. - (gradual rise). Tar driven  
through filament. Filament received  
good preliminary carbonization  
sent to Carbonizing Dept. for  
final carbonization as Order N<sup>o</sup>.  
Oct. 7<sup>th</sup> 1886.



Exp. No 4.

10/8/86

Twenty-four reg. A. fibres in  
a sealed tube, in coal-tar, (same as  
No 3). raised to Temp. of  $700^{\circ}$  Fahr.  
Not carbonized - tar driven into  
fibre. Sent to Carbonizing Dept.  
as Order No (12 fibres) Oct. 9<sup>th</sup> /86.

N<sup>o</sup> 6.

10/9/86

Fibre in Carbon Jami immersed  
in molten lead for five (5) minutes.  
Carbonization imperfect.

Oct. 9<sup>th</sup> /86

No 6

10/9/86

One Bamboo Fibre immersed in  
molten lead just below the boiling  
point, for five (5) minutes. -

Carbonization good.

Oct. 9<sup>th</sup> 1886.

2) Eighteen Bamboo fibres in forms, immersed  
in as above. Lead came in around  
fibres. Gave 3 to 5 force.

Oct. 11<sup>th</sup> 1886

3) Eighteen fibres in forms, same as  
above, only wire paper put between  
forms to keep lead out. Gave 14 to  
force.

Oct. 11<sup>th</sup> 1886

No. 7

Four Bamboo fibres in sealed  
glass tubes, in coal-tar. Raised to  
temp. of  $700^{\circ}$  Fahr.; cooled down, then  
raised again to  $700^{\circ}$ , and kept there  
30 minutes. Gave 2 fibres to Force.

Oct. 11<sup>th</sup> 186.

N<sup>o</sup> 8.

Eighteen Fibres in sealed glass  
vials; in molasses. Gradually raised  
to temperature of 500° Fahr, and  
kept there one hour.

Molasses forced into Fibres.

Five to Force 10 Fibres.

Oct. 11<sup>th</sup> 186.

N<sup>o</sup> 9

15. Reg. A. Carbon in sealed glass  
tube, in Coal tar. gradually raised  
to temp. of 700° Fahr.

Oct. 14<sup>th</sup> 1886

N<sup>o</sup> 10

Carbonized in Lead:—

Bamboo Fibres in carbon box, covered  
with carbonized Anthracite.

Temperature gradually raised  
to melting point of lead; then  
raised quickly to a white-heat.

Delivered three Carbons to Force

Oct 15<sup>th</sup> 186.

(1)

In same box, subjected to same  
process, were some preliminaryed  
carbons. In neither case did  
lead touch the filaments.

Delivered two Carbons to Force  
Oct 15<sup>th</sup> 186.

N<sup>o</sup> 11

Carbonized in Lead:-

(1) Bamboo Fibres, in cartbox  
covered with lead-filings.

Temperature raised gradually, re-  
quiring (2) hrs time, to bring it to  
the melting-point of lead:- then  
raised quickly to a white heat.  
Oct. 18<sup>th</sup> 186.

(2) In same box, subjected to same  
process were ~~the~~ preliminarily  
fibres.

~~Red two cartons to Fries~~

Oct 18<sup>th</sup> 186

Delivered to Fries, four  
cartons, min through as above

Oct 21<sup>st</sup> 186



Oct-15 to 30  
1896

1. Tar, Asphaltum + Ecast. Plumbago, mixed  
with Benzole to stiff paste.

Tar + Molasses

" " " " + Plumbago + Anthrac. coal

Tar, Plumbago + Vaseline

2. Tar, Plumbago + Shellac.

Tar Plumbago, Anthracite + Vaseline,

Soap + Plumbago,

Carbonized by sunbake in air.

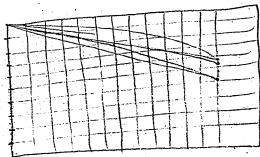
3. Asphalt. Lamp Black + crocoite.

Grass - Catkins, Lauegal, asphaltum,  
Plumbago (sprinkled) mixed with  
Benzole to stiff paste - paper

4. + Tin foil envelopes

**Lamp Factory Notebook, N-86-10-08**

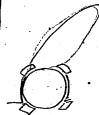
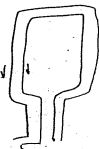
This notebook dates from October 1886. All of the technical entries are by Edison and relate to armature design and to carbon treating experiments for lamp filaments. Many of the pages were used to record the names and addresses of various suppliers. A few of these entries are in Edison's hand. The remainder are in the hand of an unknown laboratory assistant. The label on the spine has been torn and the number is missing. The book contains approximately 200 unnumbered pages. Numerous pages have been torn out of the book.



$6\frac{1}{4}$       16      1  
 33      9      59-  
              7      48 1/2

$\begin{array}{r} 18 \\ 70 \\ \hline 1260 \end{array}$

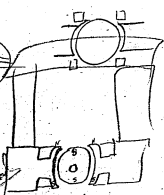
1200



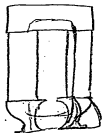
$\begin{array}{r} 203 \\ \hline 203 \end{array}$

203

Wabash  
 Valley Ranch

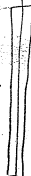
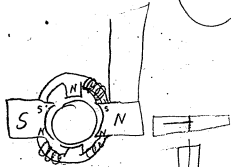
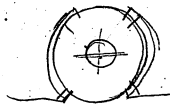


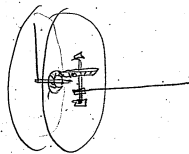
Christianity



6

1.50





Oct 8 1886 vol -

Boil 15 Carbons in strong  
KOH solution for one day  
then Boil in large quantity  
H<sub>2</sub>O for 4 hours then change  
water again & Boil 4 hours  
then take out & put in  
heater, dry and put in  
order No 20 & Boil for  
3 days - then Carbonize

do the same with the  
HPL acid carbons now  
Soaking —

$$\begin{array}{r} 140 \\ -15 \\ \hline 700 \\ +140 \\ \hline 2100 \end{array}$$

$$\begin{array}{r} 16 \\ \times 2500 \\ \hline 4000 \\ +8000 \\ \hline 8000 \end{array}$$

$$\begin{array}{r} 73 \\ \times 37 \\ \hline 218 \end{array}$$

$$\begin{array}{r} 140 \\ -568 \\ \hline 2244 \\ +2244 \\ \hline 8960 \end{array}$$

$$\begin{array}{r} 8000 \\ -640000 \\ \hline 2560000 \\ +2560000 \\ \hline 28160000 \\ +28160000 \\ \hline 33284000 \end{array}$$

Oct 8. 1886 Tar

Wash 3 lamps in Chloride  
Barium Sal. weak - to precip  
the  $\text{SO}_4$  from clamps -  
work & set up for life -

Transverse carbon & clamp  
in gasoline & use another  
wire to form an arc and clamp  
so as to decompose  $\text{CuSO}_4$   
& also the oxide - think it  
will remain bright afterward

Oct 8 1886 -

Use precipitated Magnesia  
aluminum - precipitate  
from very dilute solutions  
so as to get them exceedingly  
finely divided -

Mix the dried precipitates  
with - 1st Sugar Solution,  
Licorice Gum arabic, Tar,  
Malasse, Honey, gum Tragacanth,  
press through mould into  
filaments. Try Lime  
mixed with the above also  
(staked lime)



Oct 8 1886

Put piece, asphalt in side cup  
with U tube, ~~heat~~ get vac  
Get it off from lamp get vac  
then heat asphalt, + let  
gas in -

---

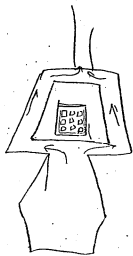
Pour ammonia  
prepare N heat salt  
of Ammonium Nitrite

---

Also intimate mixture of  
Chl Ammon + Bichrom K  
this gives on heating  
 $H_2O$  + pure N - put  
in cup on U tube,

If a Formate be treated  
with Conc  $\text{SO}_4$  pure  $\text{CO}$   
given off -

Ferrocy  $\text{K}$  heated with  $\frac{1}{2}$  oz  
heated with 4 or 5 oz  $\text{SO}_4$   
pure gas - care must be  
taken as at certain point  
gas comes off almost  
explosively -



Oct 9 1886

Gases to be used as residuals in  
the fit lamp -

Arsenimitted Hydrogen

Bromine,

Bromohydric acid gas

CO

CO<sub>2</sub>

Cl

HCl

H

Iodine

Hydrochloric acid

Phos Hydrogen

Sulphurimitted Hydrogen

Selenurimitted

Tellurimitted

Boron Trifluoride

Barium Fluoride

Bromine Fluoride

} is at gas?

Hydrofluoric acid gas

Sulphur Difluoride. Volatile Liquid

Silicon hexafluoride Volatile.

Silicon Tetrafluoride gas

Arsenic Trichloride. Liquid

~~Chrom~~

Ferrous Chloride - Volatile

Ferric Magnesium Chloride - Volatile

Nickel Chloride sublimis

Phos Trichloride, Boiling pt  $76^{\circ}\text{C}$

~~Phos~~ Trichloride Selenium. Volatile Liquid

Silicon Tetrachloride, boils 50°C

Uranium Tetrachloride, Volatile

Nitrogen Tribromide, Very Volatile.

Zinc phosphide. Volatile;

Hydrogen Silicide  $\text{H}_4\text{Si}$  gas

Chlorobromide Silicon Liquid

Phos Chlorobromide. boils 90°C

Nitrous acid

Nitric acid

Titanium tetrachloride, Boils 135°C

Titanium Tetrachloride Liquid

Tribromide Boron boils 90°C

Silicon tetrabromide Boils 150 C

~~Silicon~~ <sup>tetra</sup>  
Zirconium Bromide Easily  
volatile heat gas flame

Chlorobromide Silicon Boils 100 C

Titanium Chlorobromide " 160

Silicon Chloroform  $\text{HSiCl}_3$  <sup>boils</sup> 37°

Hydrogen silico chloride Liquid

Titanium-phospho<sup>ous</sup> chloride Melts 85

Silicon ydiform  $\text{HSi}_2\text{Cl}_3$  Boils 220, Liquid

Defluent gas Ethylene. gas.

Acetylene gas

Propane. gas

Butylene,

Methane -

Amber oil.

Benzol

Benzine.

amyl.

Kerosene,

Essential oils -

Ether.

Camphor

Creosote,

Carbolic acid.

Turpentine

Camphene

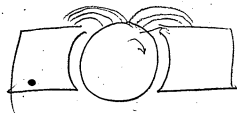
Naphtha

Heat Resins

Chloralhydrate

Monosulphide Carbon - (Solid)





A. Achard Rue de ~~la~~ <sup>Provence</sup> 60 Paris France

General agent of Electricity  
Agence Générale d'Electricité  
Passage des Panoramas, galeries Variétés  
Paris France

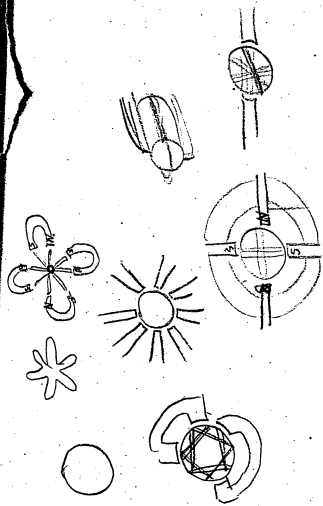
A. Alily 33 and 35 ~~Temple~~ <sup>Boulevard Temple</sup> 33 Paris France

Société anonyme de l'Aluminium  
Boul Poissonnière 21 Paris France

M. Anthony Rue de Rouigo 39  
Alger France

Association Générale de Ouvriers  
en Instruments d'Optique.  
Rue Pierre-Sevée 2 Paris France

Ateliers Ducommun  
Boulevard Magenta 18  
Paris France



Catalogues with price list  
✓ J & Minto & Co 8  
Clinton Road Bow London

---

Wm Reid & Co. 9  
5 New London St  
London EC

---

✓ Jas Stiff & Sons 14  
High St Lambeth London E

---

✓ John Warner & Sons  
Cripplegate London EC "

---

Frederick Allen & Sons 12  
✓ Upper North St Poplar London E

---

A & M Zimmermann 13  
21 Mincing Lane London EC

---

Geo Slater & Co ~~West Brompton~~  
134 Upper Thames St London EC

Wm Bailey & Sons

2 & 3 Abchurch Yard Cannon St  
London E.C. 4

---

Gas Wilkinson & Son

✓ Sheffield England

---

Heggin Lloyd & Co

✓ Manchester England

---

Geo Davidson & Co

✓ Gateshead-on-Tyne  
England

---

Old Castle Iron & Tin Plate Co

✓ Llanelli, Carmarthenshire  
England

✓ Jas MacNeill & Co

25 St Enoch Square

Glasgow  
Scotland

19

✓ Pierre Balajet

Avenue Du Prado 145

Marseille

France

20

✓ Doulton & Co

High St Lambeth

London SE

England

21

✓ Patent Plumbago & Encaustic Co

Battersea SW

London

Eng

22



Cookson & Co. 26. Philpot Lane E.C.  
Newcastle-on-Tyne England

J. L. & Co.  
41 Moorgate St., E.C.  
London, Eng.

John Oakley & Sons.  
Westminster Bridge, S.E.  
London, Eng.

Fraser & Fraser  
Brookly-Bj. Row.  
London, E. Eng.

Smith, Thomas & Co.  
Ferry Road -  
Old Kent Road S.E.  
London, Eng.

Chance Bros. & Co.  
24 Finsbury Circus, E.C.  
London, Eng.

James Powell & Sons. 29  
Temple St. Whitefriars, E.C.  
✓ London, Eng.

~~Hydraulic Engineering Co.~~  
~~131 Palace Chambers.~~  
~~Westminster, Bridge St.~~  
~~Westminster S. W. London, Eng.~~

Tyler, Haynard & Co. 30  
84 & 85 Upper Whitecross St, E.C.  
✓ London, Eng.

Hydraulic Engineering Co., 31  
131 Palace Chambers,  
Bridge St., Westminster S. W.  
✓ London, Eng.

Dring & Page  
19 & 20 Tooley St. S. E. 31  
✓ London, Eng.

Gebhardt, Rottmann & Co  
~~24 Lawrence, East Lane~~  
24 Lawrence Lane, E. C. 32  
✓ London



James Hicks -  
8 Hatton Garden, E. C. 3  
✓ London, Eng.

James Hughes  
104 Minories, E.  
✓ E. London, Eng. 35

Theodore Kieckhefer  
361 City Road, E. C.  
✓ E. C. London, Eng. 36

J. Levi & Co.  
✓ 42 Castle, Culbourn. E. C.  
E. C. London, Eng. 37

Gustave New.  
29 King Square, Goswell  
Road, E. C. 1 ✓ E. C. London. 38

Fredrick Newton & Co.  
3 Fleet St. E. C. 39  
✓ E. C. London.

Robert Nicholl  
✓ 53 Holborn - W. 40  
W. London.

John Amer 41  
99 Minories, E.  
Q. London, Eng.

John Ottway & Son, 44  
178 St. John's St. Road, E. C.  
London.

~~Frank~~  
Pastorelli & Rapkin 43  
46 Hatton Garden, E. C.  
London.

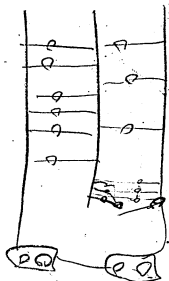
Alfred Sloper & Sons, 45  
42 New Kent S. E.  
London.

Société des Luchieres 45  
13 Hatton Garden, E. C.  
London

William Stone  
44 Gloucester St. W. C. 46  
London.

G. W. Stammers & Co.  
9 Pancras Lane, E. C. 47  
London -

Tisley, Spiller & Co. 48  
172 Brompton Road, S. W.  
London.



$$\begin{array}{r} 1250 \\ 2 \\ \hline 2500 \\ 1600 \\ \hline 4100 \end{array}$$

$$\begin{array}{r} 32. \\ 600 \\ \hline 19200 \end{array}$$

10. 30

$$\begin{array}{r} 15- \\ 16 \\ \hline 90 \\ 15- \\ \hline 240 \end{array}$$

$$\begin{array}{r} 675- \\ 30 \\ \hline 20250 \end{array}$$

$$\begin{array}{r} 2700 \\ 1600 \\ \hline 4300 \end{array}$$

$$\begin{array}{r} 9 \quad 27 \\ 600 \\ \hline 16200 \end{array}$$

$$\begin{array}{r} 1350 \\ 2 \\ \hline 2700 \end{array}$$

43. 20

$$\begin{array}{r} 675- \\ 43 \\ \hline 432025- \end{array}$$

$$\begin{array}{r} 30 \\ 60 \\ \hline 1800 \end{array}$$

6

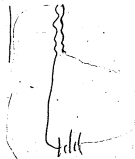
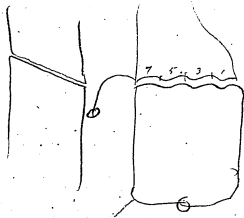
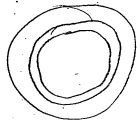
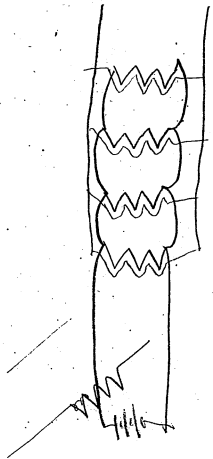
$$\begin{array}{r} 675- \\ 43 \\ \hline 29025- \\ 2423- \\ \hline 29025- \end{array}$$

91

-6-

SS

A hand-drawn schematic diagram of a circuit. On the left, a transformer is represented by a rectangle with a zigzag line on top and two horizontal lines on the bottom, each with a small circle. To the right of the transformer is a vertical line with several components connected to it. From top to bottom, these are: a variable capacitor (a rectangle with a diagonal line through it), a fixed capacitor (a rectangle), a variable capacitor (a rectangle with a diagonal line through it), and a fixed capacitor (a rectangle). Below these is a section with three horizontal lines, each with a small circle, and a label '50' below it. To the left of the vertical line, there are handwritten calculations:  $1.400 \div 10.000 = 00.140$ ,  $41.5$ , and  $52.6$ . At the top left, there is a calculation:  $1.400 \div 10.000 = 00.140$ ,  $41.5$ , and  $52.6$ . At the top right, there is a calculation:  $10.000 \div 25 = 400.000$ . The diagram is drawn on a piece of paper with a grid pattern.



Trafalgar Works Company.  
Trafalgar Road, Old  
Kent Road, S. E. 59  
London.

Edwin Richards Watts  
123 Cambridge Road, S. E. 50  
London.

J. St. Neil & Co.  
92 Fleet St. E. C. 51  
London.

John Wimple 54  
169 Shadwell, High St. E.  
London.

Alfred Holmes 53  
76 Shacklewell Lane, E.  
London.

Henry Cutch 5  
68 Barbican, E. C.  
London.

Aston & Mander 55  
25 Old Compton St. W.  
London.

R. & J. Beck  
68 Gorn Hill, E. C. 50  
London.

George Bendow, & Co.  
36 Ely Place, E. C. 17  
London.

Alexander Clarkson  
28 Bartlett Building 56  
Holborn, E. C. London.

John Henry Dallmeyer 14  
13 Bloomsbury St. W. C.  
London.

Joseph Davis & Co. 60  
6 Kensington Park Road, S. W.  
London.

James Shears & Sons 61  
Bayside Southwark  
London.

Clark Maxfield & Co, 14  
20 E. Regency St. S. W.  
Westminster, London.

Johnson & Phillips <sup>b</sup>  
16 Union Court.  
Old Broad St., E.C. London.

Octavius Harley <sup>b</sup>  
Mil~~l~~may Ave, Wildmay St. N.  
London.

E. P. & W. Baldwin <sup>b</sup> <sup>Et</sup>  
4 Corbet Court, Grace Church  
E.C. ✓ London.

~~C. W. W.~~ <sup>b</sup>  
Cromfelin, Tin Plate Co.  
~~117 Leaden H.~~  
✓ 117 Leadenhall St. E. C.  
London.

H. Erhardt & Co. <sup>b</sup>  
9 Bond Court, Wallbrook  
E. C. ✓ London.

Guinos Tin Plate Co. <sup>b</sup>  
101 Leadenhall St. E. C.  
London.



Shemwell and Co. 66  
Bridge Road  
Stratford, E.  
London.

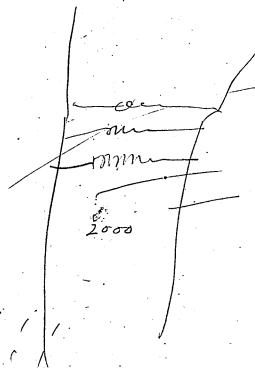
Webb, Shakespeare & Williams  
3 George Yard, Lombard  
St. E. C. 70  
London.

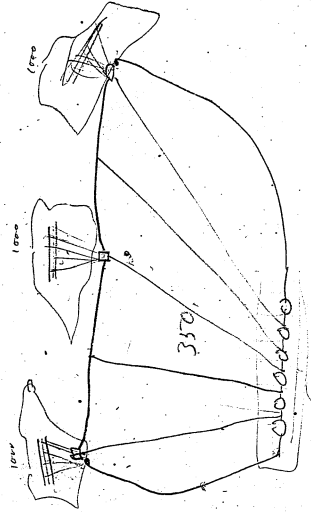
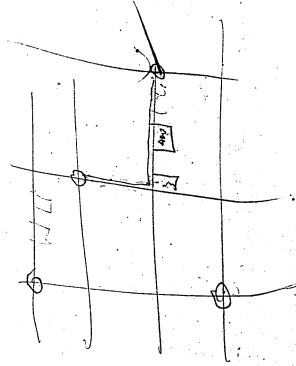
Charles Frodsham  
84 Strand, W. C. 71  
London.

Thompson & Vine 72  
118 Aldersgate, E. C.  
London

John Fletcher & Son 73  
Booth St.  
Salford, Manchester  
Eng.

Rand, Drill Co. 74  
Parkrow New York





Lewis Solomon 71  
216 Pearl St.  
✓ New York.

Henry C. Porter 76  
71 Maiden Lane  
✓ New York.

Julius Kaldenberg 77  
125 Fulton St.  
New York.

Kohnstamm & Co. 76  
126 Chambers St.  
New York.

John B. Wade 79  
40 Murray St.  
New York.

John J. Schillinger 80  
111 Broadway  
New York

Portland Cement Stone Co.  
214 Pearl St. 81  
New York.

Robert Gilmore  
78 John St. 84  
New York.

H. W. Johns, Mfg. Co.  
87 Maiden Lane 83  
New York.

Swiss Asphalt  
Rock Co. 82  
79 Maiden Lane  
New York.

William H. Childs  
73 Maiden Lane 81  
New York.

J. & H. Burge  
95 John St. 80  
New York.

Alcorn & Co. 87  
456 Hudson St.  
New York.

Newcomb Bros. 88  
586 Water St.  
New York.

New York Belting and 89  
Packing Company  
37 Park ~~Road~~ Row  
New York.

John Dwight & Co. 90  
11 Old Slip  
New York.

Gantz, Jones & Co. 91  
176 Duane St.  
New York.

Butler & Butler 92  
6 Great Jones St.  
New York.

S. Oppenheimer & Co.  
96 Pearl St. 93  
New York.

Howard & Morse  
45 Fulton St. 94  
New York.

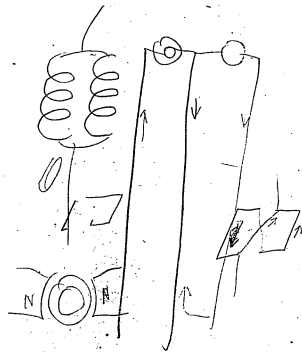
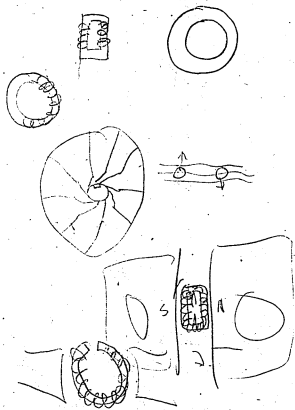
Edward A. Boyd.  
79 Murray St. 91  
New York.

Bernhard Budde 96  
50 Vesey St.  
New York.

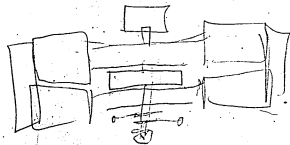
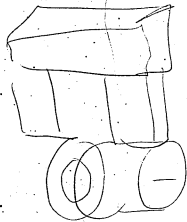
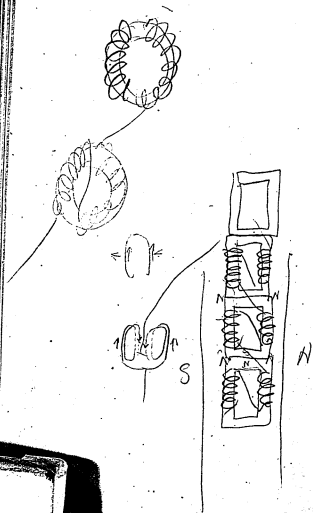
M. E. Nade & Harlin, Mfg. Co.  
56 John St. 97  
New York.

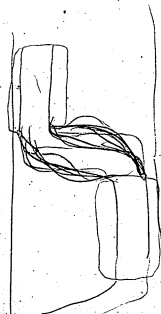
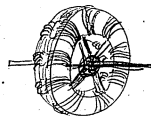
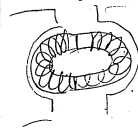
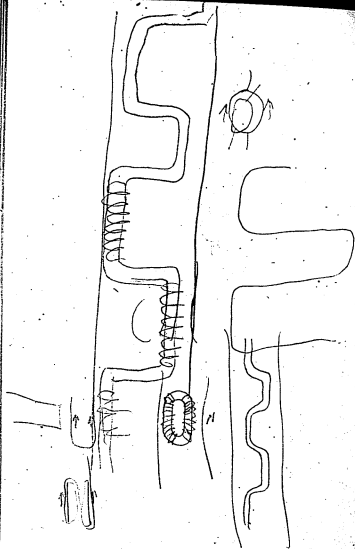
John H. Knapp. 98  
17 John St. New York.

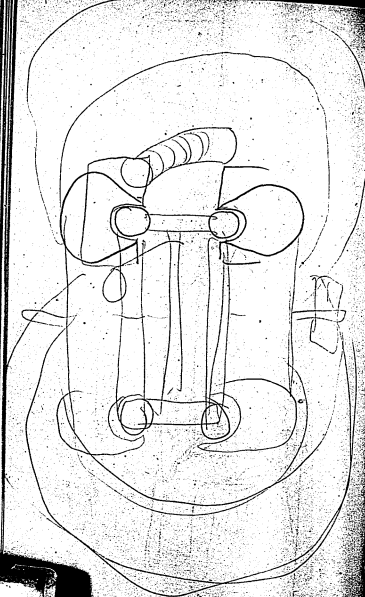
Howard  
Wallace & Sons 99  
89 Chambers St.  
New York.









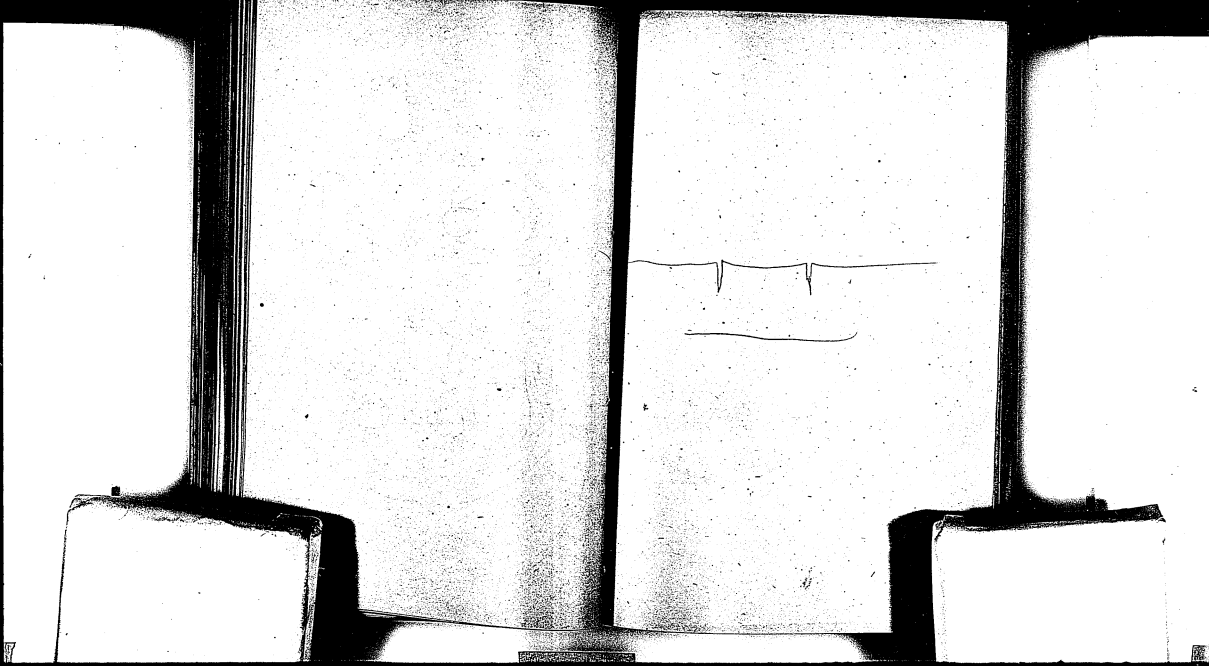


8.

$$\begin{array}{r}
 10. \\
 1000 \\
 12 \overline{) 10000} \quad 8.33 \\
 \underline{96} \\
 40 \\
 \underline{36} \\
 4
 \end{array}$$

$$\begin{array}{r}
 300 \\
 8 \\
 \hline
 2400.
 \end{array}$$

$$\begin{array}{r}
 12 \quad 12 \\
 200 \\
 \hline
 2400.
 \end{array}$$



Waterbury Brass Co. 100  
296 Broadway  
New York.

---

Edward Miller & Co 1  
35 Warren St  
New York.

---

Plummi & Atwood, Mfg. Co.  
18 Murray St  
New York

---

Brown and Bros  
81 Chambers St  
New York

---

Holmes and Briggs, Mfg. Co.  
63 Duane St  
New York.

---

Steele and Johnson, Mfg. Co.  
78 Reade St  
New York

---

William Lillias  
409 Pearl St.  
New York 6

Lewisohn Bros.  
487 Broome St  
New York 7

L. Brandeis & Co.  
133 Williams St  
New York : 8

Florence Mfg. Co  
19 Mercer St  
New York 9

New York Brush Co  
243 Pearl St  
New York 110

John H. Hoffhell  
315 Pearl St  
New York 11

Bradley and Smith.  
251 Pearl St.  
New York 12

C. P. Stagg & Co.  
43 Park Place  
New York 13

Butler and Hunting 1  
53-Dex St.  
New York

P. & F. Corbitt 11  
87 Chambers St  
New York

Hugganin Mfg. Co. 16  
166 Chambers St  
New York

Williams, White and Church 17  
- ill  
55 Warren St  
New York

Flechtman and Gade 18  
206 Canal St  
New York

Hammacher and Co. 19  
209 Bowler  
New York

J. Copcutt, Lohr & Co. 20  
440 Washington St  
New York

Hawes, Gillard & Co  
212 Lewis St  
New York 1

A. L. Rapp and Sons  
90 Walker St  
New York ✓

Barbour Bros.  
134 Church St  
New York 3

John Irvine  
288 Greenwich St  
New York 4

George L. Rose  
18 Spruce St  
New York 5

Fredrick Buchner  
5 Chatham Square  
New York 6

L. Elmore and Richards  
4 Murray St  
New York 7



Lewis K. Bell  
56 Pine St  
New York

8

James R. Dey  
66 Courtlandt St  
New York

9

Edward L. Embree  
18 Vesey St  
New York

130

H. W. Everett & Co  
85 William St  
New York

1

Alexander Fries & Bros.  
16 College Place  
New York

✓

Edward G. Gilchrist  
62 Fulton St  
New York

3

William Goldstein  
450 Cherry St  
New York.

4

Otto Hannon 5  
7 Burling St. Successor to  
Louis Pokorny. New York  
Harrison Bros & Co. 6  
163 Fulton St. N. Y.

G. W. Hubbard & Co. 7  
55 Pine St., N. Y.

Kalbfeisch's, Martin, Sons, 8  
55 Fulton St., N. Y.

James Lee & Co. 9  
72 Pine St., N. Y.

Lodi Chemical Works 140  
22 Platt St., N. Y.

Manhattan Chemical Co. 1  
129 Water St., N. Y.

Maynard Chemical Co. 2  
424 Washington St., N. Y.

James Meyer Jr. 3  
48 Platt St., N. Y.

R. L. Mitchell & Co. 4  
141 Water St. N. Y. 7

James L. Morgan & Co.  
47 Fulton St., N. Y.

N. Y. Chemical & Dye Co.  
3 E. 4<sup>th</sup> St., N. Y.

N. Y. Dye Wood Extract and  
Chemical Company.  
161 Front St., N. Y.

G. H. Nichols & Co.  
99 Maiden Lane, N. Y.

H. Dagood & Co.  
13 Burling St., N. Y.

Agents for the Bergenport  
Chemical Company

Page, Kidder & Fletcher  
10 Warren St., N. Y.

John Pettit & Bro.  
240 Pearl St., N. Y.

William Pickhardt & Kuttroff  
98 Liberty St.  
N. Y.

Pugh & Putney  
263 Front St., N.

Lewis H. Rogers.  
235 E 31<sup>st</sup> St., N. Y.

Charles H. Rutherford  
26 Liberty St. N. Y.

Henry Snyder  
54 Nine St. N. Y.

Walter C. Tiffany  
150 Nassau, N. Y.

Fred. Toussaint  
Mott Ave. c. 144<sup>th</sup> St., N. Y.

William H. Trippe  
87 Walker St. N. Y.

Visscher & Hall  
96 Wall St., N. Y.

Walton Chemical Co.  
205 Prince St., N. Y.

George E. White  
109 Front St., N. Y.

Edward M. Willit  
549 W. 34<sup>th</sup> St. N. Y.

Wing & Evans  
93 William St. N.

E. J. Beggs & Co <sup>5</sup>  
✓ 147 Maiden Lane, N. Y.

Billings, Clapp & Co.  
✓ 50 Maiden Lane, N. Y. <sup>6</sup>

George Binns ✓  
5 Gold St. N. Y. <sup>7</sup>

Bloede and Rothbone  
✓ 15 Cedar St. N. Y. <sup>8</sup>

Frank Crosby ✓  
660 Sixth Ave., N. Y. <sup>9</sup>

John H. Currier  
✓ 200 E. 29<sup>th</sup> St., N. Y. <sup>10</sup>

Dibblee and Co.  
✓ 132 1/2 Broadway, N. Y. <sup>1</sup>

Diecker & Forster  
✓ 157 Smith St., N. Y. <sup>2</sup>

John C. Drapfus ✓  
409 Lex. Ave. N. Y. <sup>3</sup>

J. G. Drapfus Drapfus & Co.  
✓ 15 Cedar St., N. Y. <sup>4</sup>

Henry Edgar ✓  
629 Hudson St., N. Y. <sup>5</sup>

Eidensalz Chemical Co.  
120 Liberty St., N. Y.

John Eikenkrach  
34 Platt St., N. Y.

L. Heuchtinger & Co.  
16 Dec. St. N. Y.

William E. Eldstone  
1237 B'way, N. Y.

Frederick H. Heeking  
221 Pearl St., N. Y.

Hiscox & Co.  
163 William St., N. Y.

Augustus Hurd  
22 New Church St., N. Y.

Henry T. Jarrett  
106 Ave. C., N. Y.

Martin Kalbfleisch's Sons  
55 Fulton St., N. Y.

B. Keith & Co.  
41 Liberty St., N. Y.

King and Hunt  
197 Pearl St., N. Y.

Picture frames:

Fans -

Buttons,

Clock Cases,

Decorating.

~~Table~~

Patterning platinum foil

Tile,

Brilliant cane,

Watch Cases,

Combs

Charles H. Kraft.

18 Exchange Place, N.Y.

D. Langley's Son & Co.

8 Cooper Union, N.Y.

John E. Lawer

174 Pearl St., N.Y.

Hippolite Lefasseur

587 1/2 Mich., N.Y.

Mass Schleicher & Co.

6 Gold St. N.Y.

James Meyer Jr.

87 Broad + 48 New St. N.Y.

J. L. Milne & Co.

70 New Church St. N.Y.

Fried. <sup>C</sup>Muspgiller

195 Duane St., N.Y.

Fried. Oakes

34 Dey St., N.Y.

Charles C. Parsons

542 E. 20<sup>th</sup> + 34 Pine St.  
N.Y.

J. C. + D. Pennington <sup>1900</sup>  
5 William St. N. Y.

Charles H. Phillips <sup>1908</sup>  
2 Platt St. N. Y.

Lawrence P. Piercy <sup>1900</sup>  
62 Church St. N. Y.

Porter, Stanley & Co. <sup>210</sup>  
155 Broadway St. N. Y.

Reed and Carnrick <sup>200</sup>  
196 Fulton St. N. Y.

Scott + Bowne <sup>200</sup>  
125 Hudson St. N. Y.

George H. Smith & Co. <sup>200</sup>  
156 Maiden Lane, N. Y.

Hildeny & Co. <sup>200</sup>  
24 Liberty St. N. Y.

Townsend, Wilson & Co. <sup>200</sup>  
38 Murray St. N. Y.

Urban Adolph <sup>200</sup>  
497 Kent Ave. N. Y.



James E. Walker & Co. 207  
✓ 5 Rector St. N. Y.

William R. Warner & Co. 208  
✓ 33 John St., N. Y.

Charles W. White & Co. 209 St  
54 Maiden Lane + 29 Liberty  
N. Y.

D. Douglass Williamson 210  
✓ 1 College Place, N. Y.

Winchester & Co. 211  
36 John St., N. Y.

Isaac S. Wymann 217  
✓ 14 1/2 Horatio St. N. Y.

Stammill & Gillespie 213  
240 + 242 Front St., N. Y.

William Anderson 214  
54 Barclay St., N. Y.

E. Cauldwell's Son 215  
✓ 76 Warren St.

Oscar Cheismann 214  
✓ 74 Warren St., N. Y.

E. T. Conklin

✓ 73 Murray St., N. Y. <sup>217</sup>

Crystal Glass Co.

✓ 44 Murray St., N. Y. <sup>218</sup>

Durceny Bros.

✓ 50 Maiden Lane, N. Y. <sup>219</sup>

Christians Gosspert

✓ 233 Third Ave., N. Y. <sup>220</sup>

Geo. A. Hammond

✓ 144 E. B'way, N. Y. <sup>221</sup>

John Leach

✓ 60 Barclay St., N. Y. <sup>222</sup>

~~Theodore Higgins~~

Theodore Higgins

✓ 180 E. Houston St., N. Y. <sup>223</sup>

William H. Wilson

✓ 38 Vesey St., N. Y.

James Wiseman

✓ 85 Warren St., N. Y.

George W. Woodward

✓ 42 Murray St., N. Y.

John Blips & Co.  
110 Wall St., N. Y.

D. Eggert's Sons  
74 Wall St. N. Y.

Samuel Hammond  
41 William, opp. Custom H.  
N. Y.

N. S. + J. D. Meigs  
146 Water St., N. Y.

John Pettit & Bro.  
240 Pearl St., N. Y.

M. Gabriel  
205 Pearl St., N. Y.

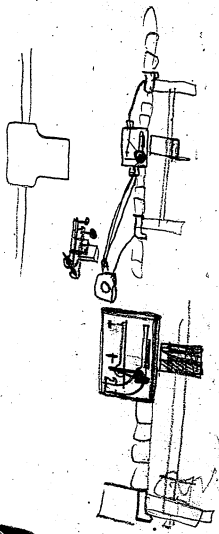
Guy C. Hotchkiss, Field & Co.  
624 E. 14<sup>th</sup> St., N. Y.

Charles E. Little  
59 Mott St., N. Y.

Hendricks Bros.  
49 Cliff St., N. Y.

A. C. Keeney & Clarke  
54 Cliff St., N. Y.

New Haven Copper Co.  
235 Pearl St., N. Y.



Bridgegrater Iron Co.  
73 Pearl St., N. Y.

T. Shriver & Co.  
333 E. 56 St., N. Y.

D. Allen's Sons  
166 Mont St., N. Y.

Cable Filax Mills  
113 North St., N. Y.

Louis C. Glover  
29 Cliff and 245 Pearl St., N. Y.

A. H. Hart & Co.  
90 White St., N. Y.

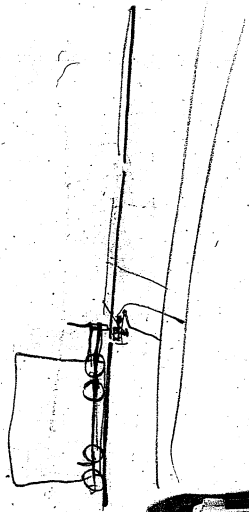
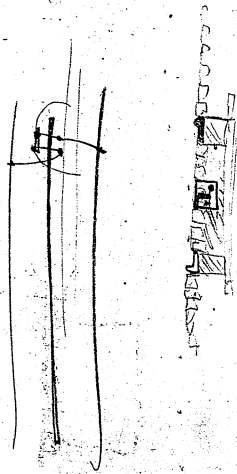
Williams Wall's Sons  
113 Wall and 4 Jones La., N. Y.

Lawrence Waterbury & Co.  
136 Front St., N. Y.

Augustus Collet & Co.  
E. 20<sup>th</sup> St + B'way, N. Y.

Charles Frickert  
37 Greene St., N. Y.

John Henry Vogt  
421 B'way, N. Y.



J. E. + L. E. Baldwin  
45 Fulton St., N. Y.

William H. Godfrey  
51 Fulton St., N. Y.

N. Y. Cork Cutting Co.  
45 Fulton St., N. Y.

Boera + Co.  
101 Maiden Lane, N. Y.

William King + Co.  
132 Maiden La., N. Y.

Marshall Lefferts  
96 Beckman + 495 Cherry St.  
N. Y.

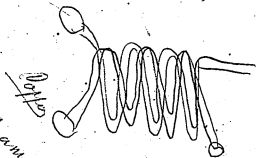
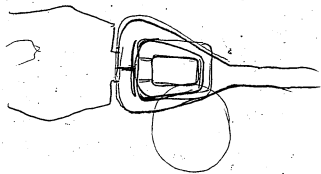
Brinckerhoff, Turner + Co.  
109 Duane St., N. Y.

William P. Atkinson  
97 Pearl + 108 Morton St.  
N. Y.

Am. Graphite Co.  
24 Cliff St., N. Y.

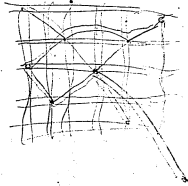
J. Goebel + Co.  
129 Maiden La., N. Y.

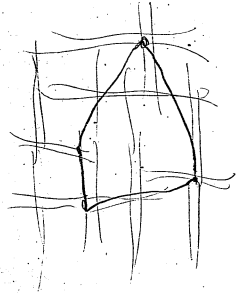
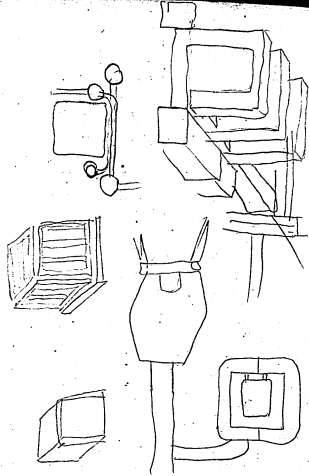
John Biddle  
207 Centre St., N. Y.



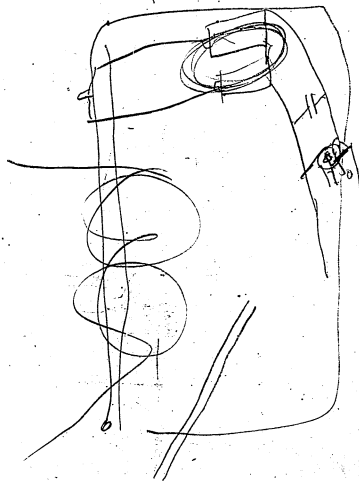
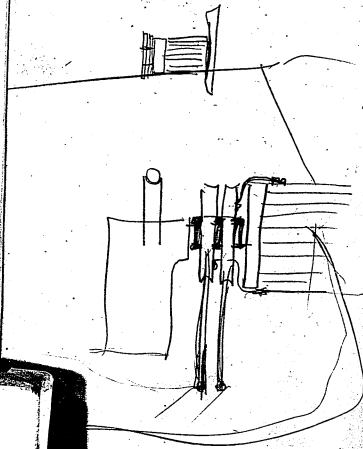
In a magnetic induction  
 apparatus for inducing  
 the current of the electric  
 current the reversed of  
 the polarity is obtained  
 through the primary in  
 the apparatus.

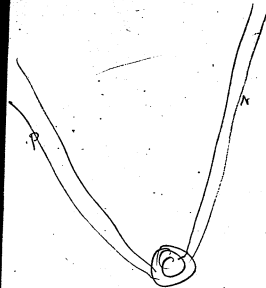
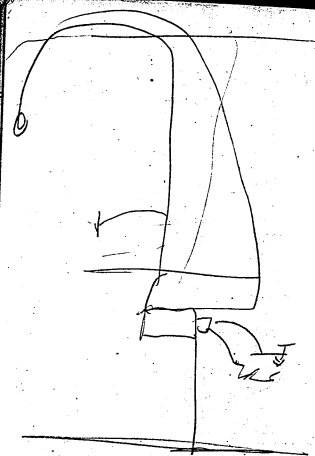
10/10











Philip Schmidt  
✓ 41 Greene St., N. Y.

Johnston Bros.  
✓ 1260 B'way, N. Y.

Samuel S. White  
767, 769 and 1300 B'way, N. Y.

John Backus  
✓ 46 Cherry St., N. Y.

Crampton Bros.  
✓ 6 Rutgers Pl., N. Y.

R. Hoe & Co.  
✓ 504 Grand St., N. Y.

Mineralized Rubber Co.  
✓ 22 Platt St., N. Y.

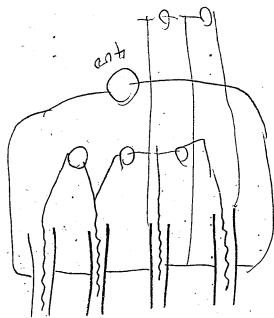
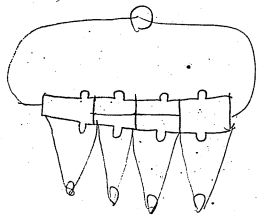
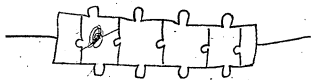
Edmonds & Benton  
✓ 270 West St., N. Y.

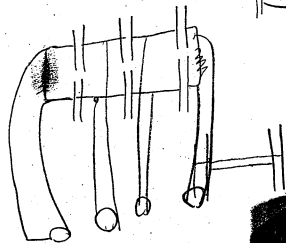
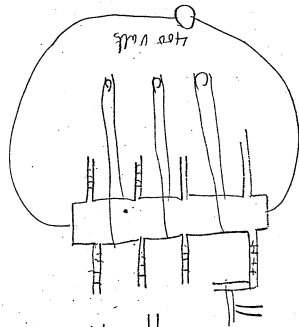
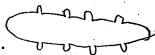
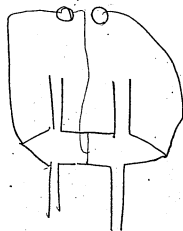
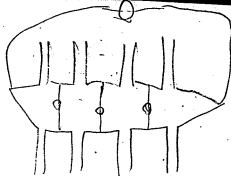
John Sells & Son  
95 John St., N. Y.

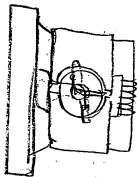
William Rupkin's Sons  
74 William St., N. Y.

Tyler and Finch  
✓ 54 Cedar St., N. Y.

Cary & Morgan  
234 N. 29<sup>th</sup> St. N. Y.







60 / 1500  
 1200 / 25-  
 300

Bogart's Patents  
 41 Union Sq. S. W. Cor.  
 17<sup>th</sup> St. N. Y.

Bennett Brothers/  
 91 Walker St., N. Y.

Boston & Sandwich Glass Co.  
 21 Barclay + 26 Park Pl., N. Y.

Hagerty Bros. & Co.  
 10 Platt St. N. Y.

D. F. Nieman & Co.  
 16 Murray + 19 Park Pl.  
 N. Y.

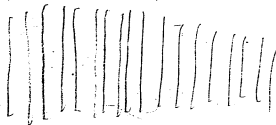
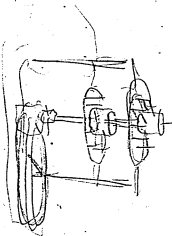
E. Steiger 23 Park Pl., N. Y.

E. R. Durkee & Co.  
 135 Grater St., N. Y.

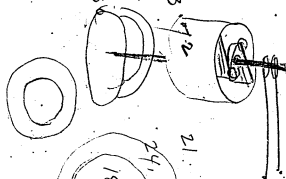
~~in Gillespie~~  
 Louis C. Gillespie  
 8 Fletcher St., N. Y.

John S. Lamson & Bro.  
 77 Maiden La., N. Y.

Louis A. Salomon  
 216 Pearl St., N. Y.



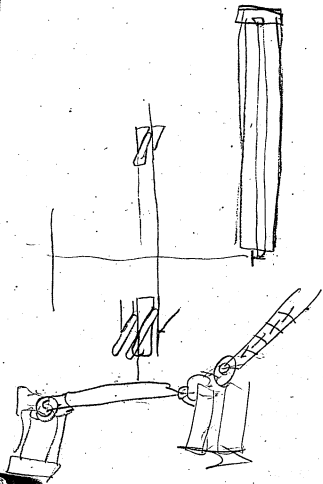
$$\begin{array}{r} 250 \overline{) 744} \\ \underline{500} \\ 244 \\ \underline{240} \\ 40 \\ \underline{40} \\ 0 \end{array}$$



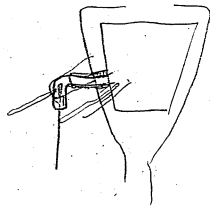
[Faint, illegible text, possibly a list or notes]

$$\begin{array}{r} 16 \overline{) 200} \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

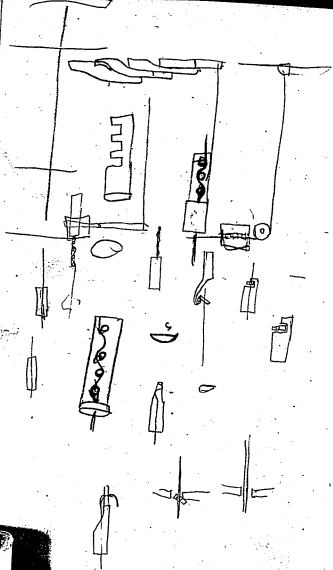


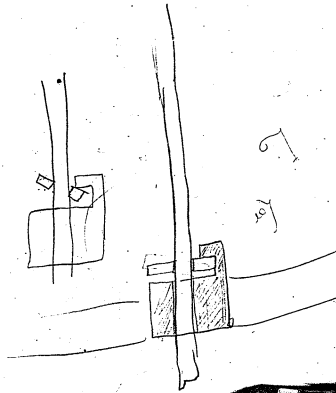
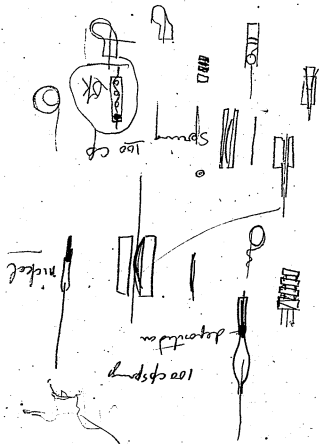


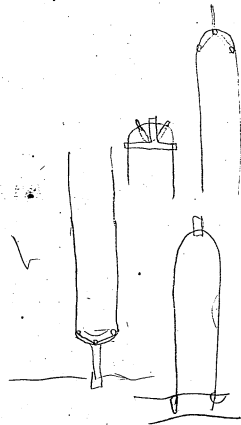
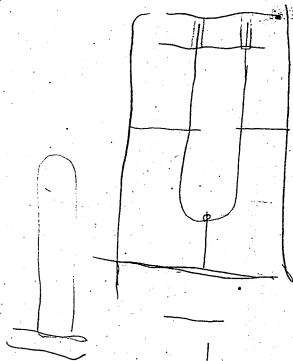
Can

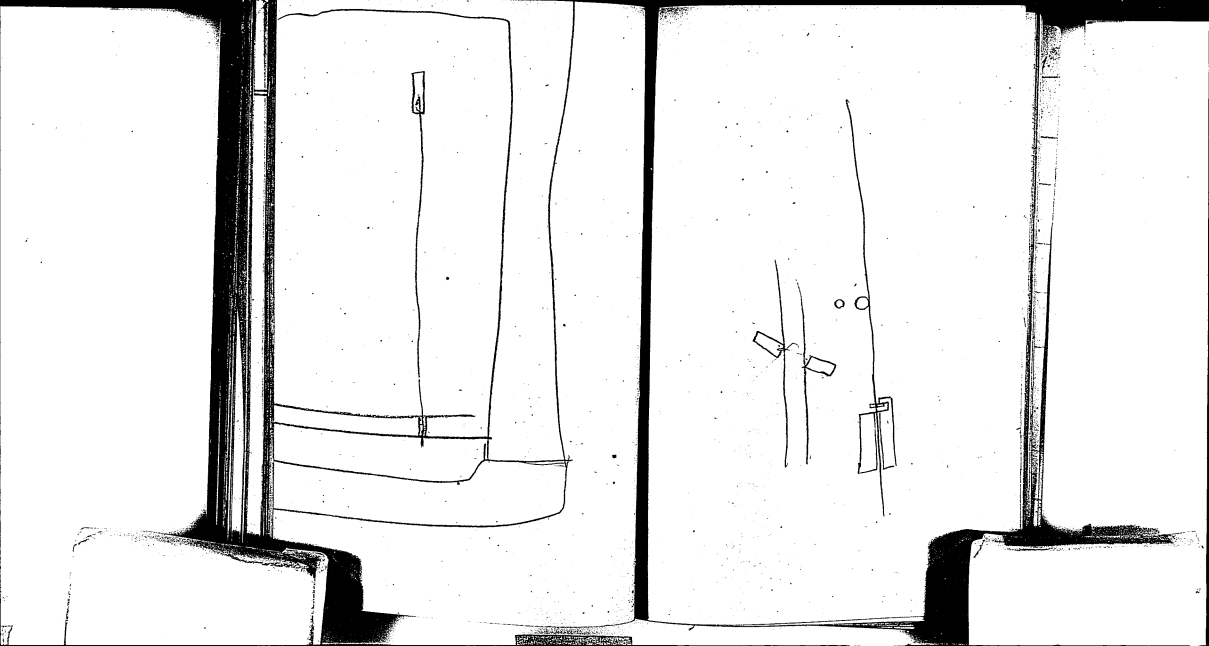


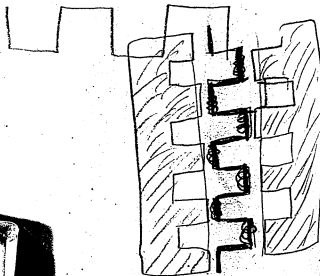




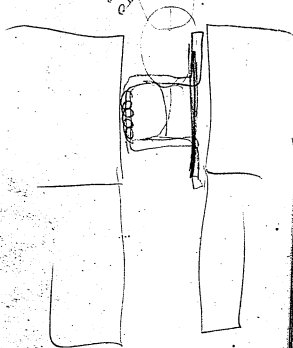








$\frac{a^2}{a^2} = 1$



$$\begin{array}{r} 20. \\ 5 \end{array}$$

$$\begin{array}{r} 8 \overline{) 5006} \\ \underline{62} \end{array}$$

$$25,$$

$$180,$$

$$\begin{array}{r} 2 \overline{) 740} \\ 16 \overline{) 370} \quad (23.4) \\ \underline{32} \\ 50 \\ \underline{48} \\ 20 \end{array}$$

$$\begin{array}{r} 8 \overline{) 23} \\ 15. \end{array}$$

$$\begin{array}{r} 25 \overline{) 7400} \quad (296.) \\ \underline{50} \\ 240 \\ \underline{225} \\ 150 \\ \underline{150} \end{array}$$

$$\begin{array}{r} 296 \\ 370 \\ \underline{29} \\ 77. \end{array}$$

$$\begin{array}{r} 60 \overline{) 3000} \quad (50) \\ \underline{3000} \end{array}$$

$$50, \quad 120.$$

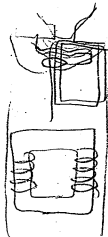
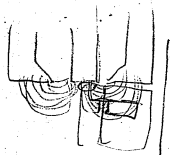
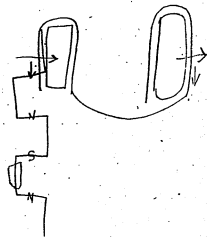
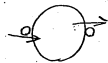
$$\begin{array}{r} 150 \\ 60 \\ \underline{9000} \end{array}$$

$$\begin{array}{r} 760 \\ 60 \\ \underline{600} \end{array}$$

$$\begin{array}{r} 16 \overline{) 250} \quad (15.6) \\ \underline{160} \\ 900. \end{array}$$

$$\begin{array}{r} 175 \\ 60 \\ \underline{10500} \end{array}$$

$$180,$$



75

1:

2000

100 000  
120 000  
50 000  
25 000  
220 000  
315 000

150

300 000

180

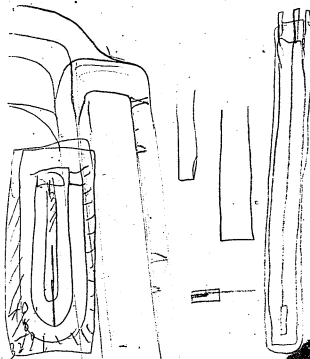
150

50

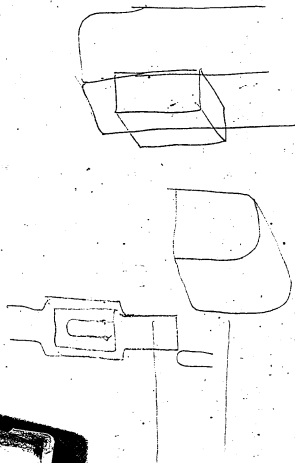
50

50

43



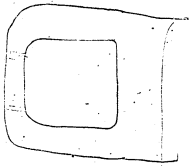
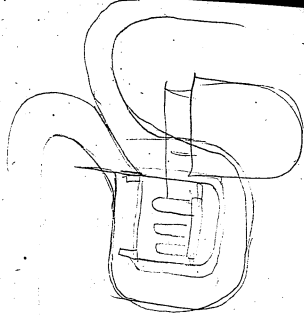




500 feet, 6.

1000.





Sarah Bishop  
422 E. 25th St., N.Y.

Alexander King & Co.  
84 Leonard, N.Y.

Benj. Fox 250 Water St., N.Y.

Pocasset Iron Works  
9 Cliff St., N.Y.

William T. Wells  
78 Beekman St., N.Y.

C. H. May, Firth & Co.  
63 Pearl St., N.Y.

Brown Caloric Engine Co.  
57 Lewis St., N.Y.

A. E. Roper & Herrill Co.  
91 Washington St., N.Y.

E. Lyon & Co.  
470 Grand St., N.Y.

Etienne Gillet  
10 Courtlandt St., N.Y.

Composite Iron Works Co.  
133 Mercer St., N. Y.

Otto Gerdaus  
41 Dey St., N. Y.

H. Grote & Co.  
114 E. 14<sup>th</sup> St. N. Y.

R. Isaacs & Brothers  
627 Broadway, N. Y.

Millard F. Bayden  
60 Ann St. N. Y.

Joseph H. Binney  
20 Cortlandt St. N. Y.

Carbow Black Co.  
42 John St., N. Y.

H. Kohnstamm & Co.  
126 Chambers St., N. Y.

John L. Caldwell  
67 Beekman St. N. Y.

Colwell Lead Co.  
58 Centre, 524 Pearl,  
1416 Broadway, N. Y.

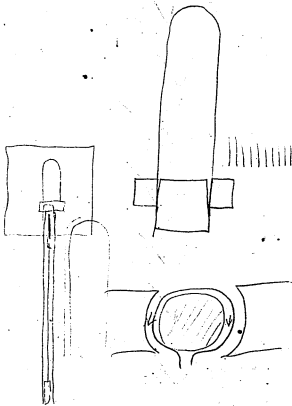
5300  
56  
31800

6  
145000  
8  
1160000

53000  
16000  
12000  
6000  
3000  
50000  
10000  
130000

500  
900  
3  
166000

30000  
16000  
10000  
6000  
11600  
7300  
3000  
7600



N. Y. Smelting & Refining Co.  
✓ 151 Jane St. N. Y.

Nathan & Bros.  
82 Beuleman + 135 W. 30<sup>th</sup>  
New York

Anton Heim  
33 Ferry + r 225 E. 36<sup>th</sup> St.  
N. Y.

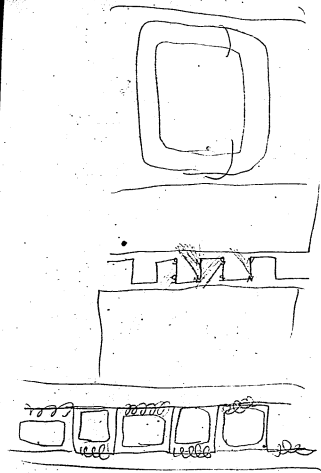
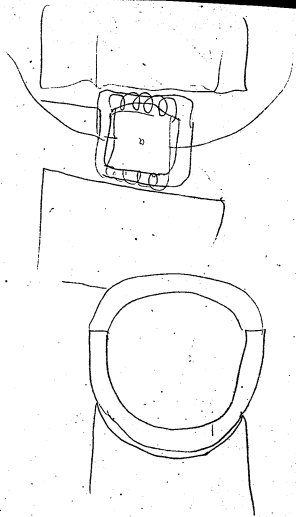
J. B. Hoyt & Co.  
28 Spruce, 212 Eldridge +  
Ft. E. 44<sup>th</sup> St. N. Y.

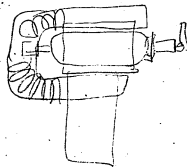
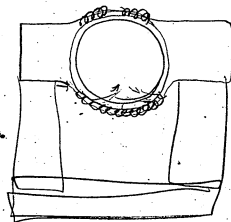
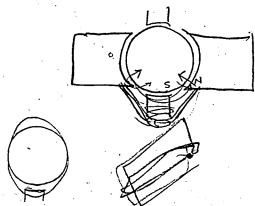
Reuben Smith  
✓ 4 Fourth Ave., N. Y.

Am. Linoleum Mfg. Co.  
Rt. Richmond, S. I.  
Agents: Joseph Wild & Co.  
90 + 92 Thomas St. N. Y.

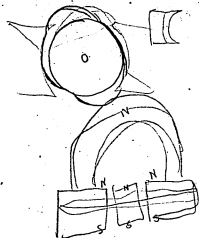
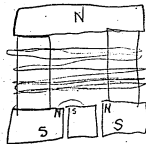
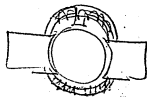
Victor E. Manger + Pertie  
110 Reade St. N. Y.

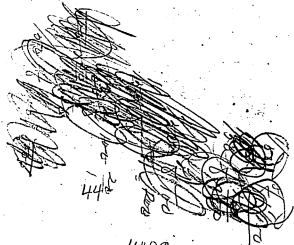
Henry Gaspar  
193 William St. N. Y.





100 V 1 201





440

$$\begin{array}{r} 4400 \\ 50 \\ \hline 220000 \end{array}$$

1.4

7

35

$\frac{1}{200}$

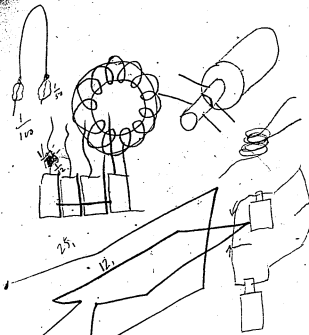
2

$\frac{1}{100}$

$\frac{1}{100}$

50

$\frac{1}{5000}$

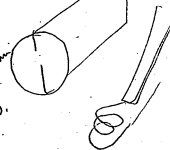


$$\begin{array}{r} 44 \\ 5000 \\ \hline 220000 \end{array}$$

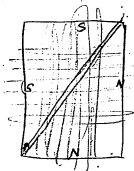
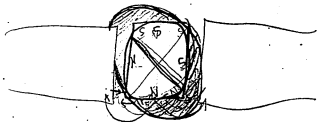
$$\begin{array}{r} 440 \\ 50 \\ \hline 22000 \end{array}$$

1 amp 1 sec

50.







Mayers, Merrill, & Ottmann  
23 Warren St. N. Y.

Stephen R. Krom  
21 Liberty St. N. Y.

Alexander Maxwell  
176 Broadway Fourth Ave. n. 138<sup>th</sup> St.  
N. Y.

Oscar G. Ahlstrom  
162 Williams St., N. Y.

John J. Barry  
90 Fulton St. N. Y.

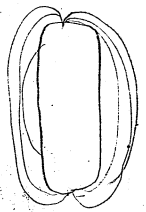
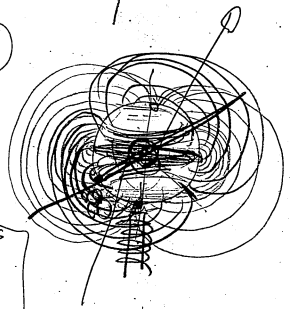
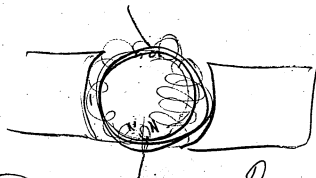
Adolph Bayer  
63 Fulton St. N. Y.

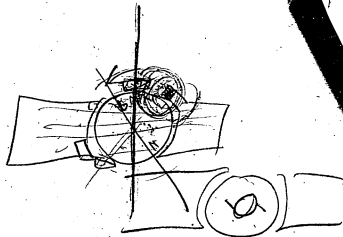
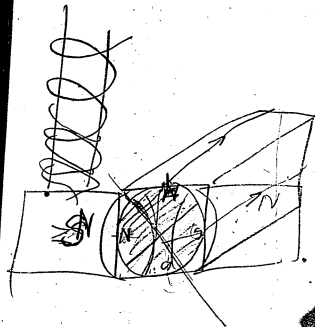
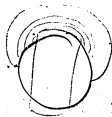
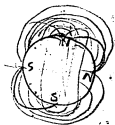
Beck Brothers  
50 Fulton St., N. Y.

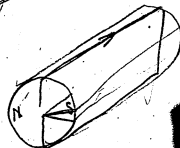
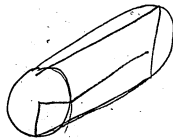
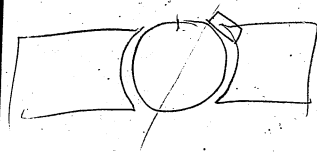
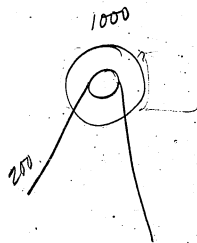
D. Ed Eggert's Sons  
74 Wall St. N. Y.

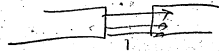
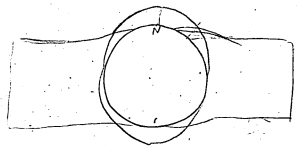
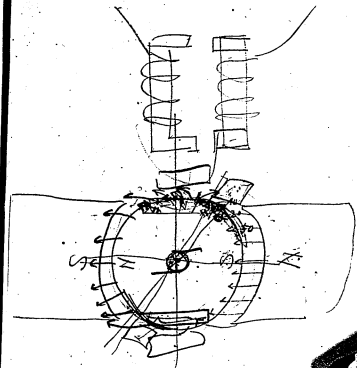
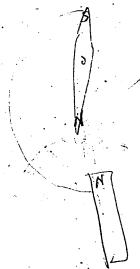
Hugh H. Hunter  
1132 B'way. N. Y.

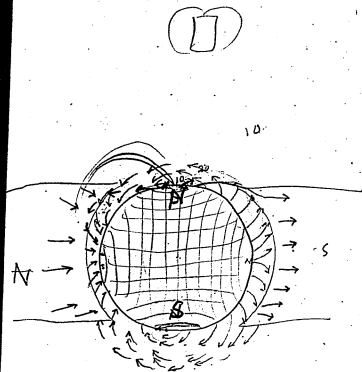
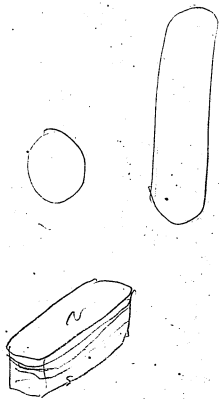
Frank Knox  
52 Nassau St., N. Y.

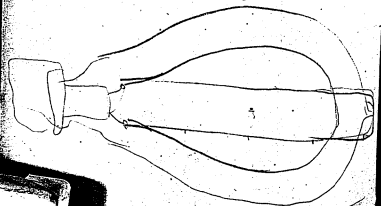
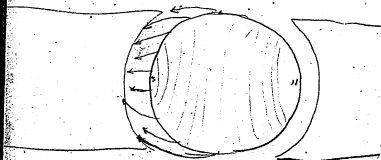












U. G. Physical & Optical Co.  
274 St. Jones St., N. Y.

Stackpole & Bros.  
44 Fulton St. N. Y.

F. W. Wagner & Son  
43 Maiden La. N. Y.

Alexander D. Elbers  
26 1/2 Broadway N. Y.

John Pettit & Bros.  
240 Pearl St., N. Y.

H. O. Darcy & Sons <sup>N. Y.</sup>  
57 South + 115 Wall St.

John H. Pearce  
45 Lispenard, N. Y.

Boyd & Chase, <sup>Eng.</sup>  
E. 107 St. c. First Ave

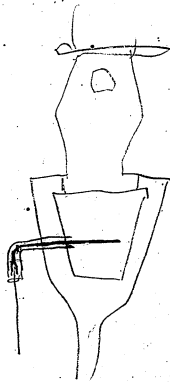
Bausch & Lomb Optical Co.  
37 Maiden La. N. Y.

Hugh W. Hunter  
1132 Broadway, N. Y.









Fairbanks & Co  
311 Broadway. N. Y.

Scales House  
325 Broadway. N. Y.

Nesley Cooke  
41 Eighth Eighth St. N. Y.

Jonathans Ward  
155 Maiden La., N. Y.

Bradley & Carrier  
54 Dey St. N. Y.

Pennsylvan Slate Co.  
50 Union Sq. c. 4<sup>th</sup> an +  
E. 17<sup>th</sup> St. N. Y.

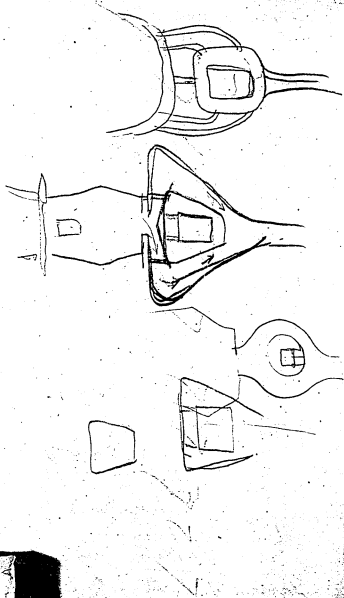
John F. Byrnes  
22 1/2 Centre St. N. Y.

Steiner, Kahan & Co.  
478 Broadway. N. Y.

Salanc & Grosjean Infq. Co.  
19 Cliff St., N. Y.

U. S. Stamping Co.  
68 Beekman St. N. Y.

James S. Pratt 81 Fulton St. N. Y.



Am. Tool Co.  
116 Chambers St., N. Y.

Douglass Mfg. Co.  
45 Chambers St. N. Y.

Fraser & Co.  
62 Chatham St., N. Y.

~~Interchangeable~~  
Interchangeable Tool Co.  
57 Hudson St. N. Y.

Michael Lukanitsch  
351 Broome St. N. Y.

James T. Pratt & Co.  
58 Fulton St. N. Y.

H. Prentiss & Co.  
14 Dey St., N. Y.

Francis Knapp  
171 Suffolk St. N. Y.

Samuel J. Albright  
140 Centre St., N. Y.

Harp & Co.  
117 Pine St. & 321 E. 22<sup>d</sup> St. N. Y.



100

$$\begin{array}{r} 5 \overline{) 1908} \\ \underline{10} \\ 908 \\ \underline{18} \\ 728 \\ \underline{70} \\ 658 \end{array}$$

$$\begin{array}{r} 5 \overline{) 900} \\ \underline{40} \\ 500 \\ \underline{40} \\ 460 \end{array}$$

$$\begin{array}{r} 3 \overline{) 100} \\ \underline{60} \\ 40 \end{array}$$

$$\begin{array}{r} 9 \overline{) 100} \\ \underline{90} \\ 10 \end{array}$$

$$\begin{array}{r} 75 \\ 400 \\ \hline 30,000 \end{array}$$

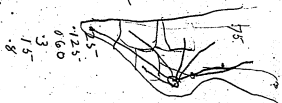
$$\begin{array}{r} 400 \overline{) 30000} \\ \underline{28000} \\ 2000 \\ \underline{2000} \\ 0 \end{array}$$

$$\begin{array}{r} 8 \\ 10000 \text{ atm} \end{array}$$

$$\begin{array}{r} 200 \quad 15 \text{ ---} \\ 400 \quad 7500 \text{ ---} \\ 800 \quad 3750 \text{ ---} \\ 1600 \quad 1875 \text{ ---} \end{array}$$

$$\begin{array}{r} 1800 \text{ km} \\ 16 \\ 8 \\ 4 \\ 2 \\ 1 \end{array}$$

$$\begin{array}{r} 2.50 \\ 1.25 \\ 1.625 \\ 3.125 \\ 1000 \\ 2 \\ 4 \\ 6 \\ 16 \\ 32 \end{array}$$

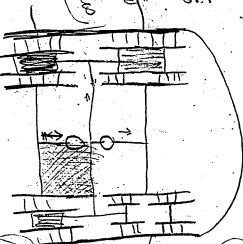


900 3 square feet 11.5 cm x 1.5 cm

12 1/2 p  
72 1/2

31 000

6 miles

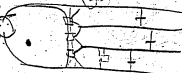


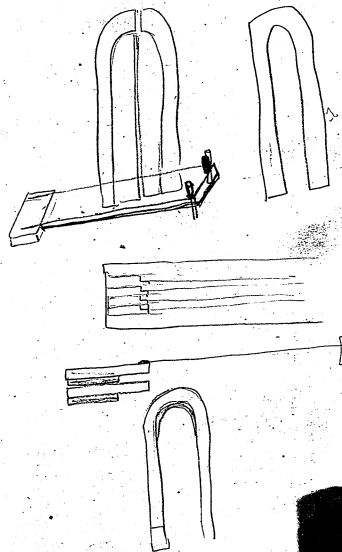
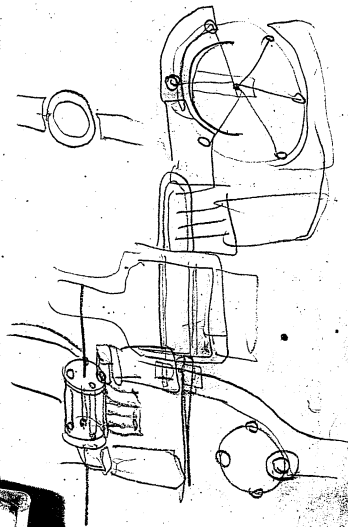
90 82.

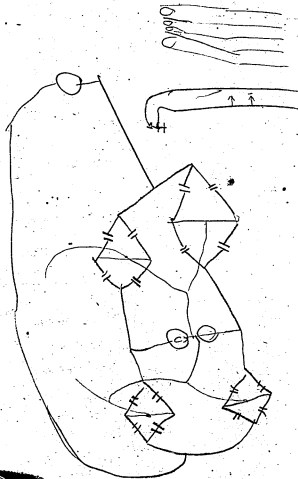
82 p 82

72 64

8 1/2 miles

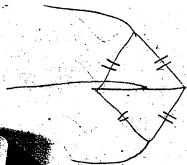
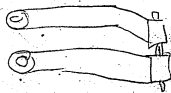
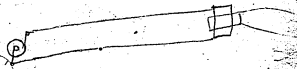






- Albert Berger & Co.  
47 Maiden La. N.Y.
- Chas. Armsheimer  
67 Nassau. N.Y.
- Israel Farjeon  
75 Nassau. N.Y.
- Henry Ginnely  
31 Maiden La. N.Y.
- L. Hammel & Co.  
9 Maiden La. N.Y.
- Reichhelm & Koester  
67 Nassau, N.Y.
- Friedrick Wagner  
82 Nassau, N.Y.
- Henry Jimmysh  
8 Maiden La. N.Y.
- James M. Botsam  
11 B'way, N.Y.
- E. Imhausen  
212 B'way, N.Y.
- William Bruening  
164 Allen St. N.Y.
- Clinton Wire Cloth Co.  
73 Fulton St. N.Y.
- Passaic Wire Co.  
113 Liberty St., N.Y.





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#### POCKET NOTEBOOKS, 1878-1886

The pocket notebooks are a group of miscellaneous books, generally measuring about 3 to 4 inches in width and 6 to 7 inches in height. Included among the pocket notebooks is a set of six journals kept by Charles P. Mott between March 1880 and March 1881 to record daily activities at the Menlo Park Laboratory. The entries in these books were later transferred, sometimes in expanded form, to Menlo Park Notebooks #53 and #117. The other pocket notebooks are by Edison and Charles Batchelor. The entries relate to a wide variety of topics, including electric lighting, telephony, telegraphy, the phonograph, and hearing aids.

The books appear on the microfilm in the following order:

A. Mott Journals, 1880-1881

1. PN-80-04-09 (1880)
2. PN-80-05-03 (1880)
3. PN-80-06-08 (1880)
4. PN-80-07-14 (1880)
5. PN-80-09-23 (1880-1881)
6. PN-81-01-19 (1881)

B. Miscellaneous Pocket Notebooks, 1878-1886

1. PN-78-02-24 (1878-1879)
2. PN-82-04-01 (1882-1883)
3. PN-82-09-04 (1882)
4. PN-82-00-00.1 (1882)
5. PN-84-02-25 (1884)
6. PN-86-03-04 (1886)
7. PN-80-00-01 (undated)
8. PN-86-00-00.3 (undated)

**Mott Journal #1 [PN-80-04-09]**

This is the first of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook, which covers the period April-May 1880, begins about one month after Mott's first Menlo Park notebook. The front cover is labeled "150" and is inscribed "Notes taken by the way" and "1st." The back cover is inscribed "1880." The book contains approximately 40 unnumbered pages.

April 9.

All energy bent upon rods and  
bent apparatus for reducing it to  
paper dimensions.

Mr. Keenig finished diagrams of  
hook and staple for Electric Iron  
Co.

Went calculating size of wire  
necess-ary for running about 50  
feet to the lamps. See Note Book  
No. 66. 64.65 & 70

Spent time collecting evidence on  
interference cases.

Basic experimenting on collecting rust  
and ferrous from <sup>water</sup> in alcohol at  
250.000 R.M. Note No 82 & 109

Hammer & Lanson experimenting on  
electing Mercury, got high result V  
with Sulphuric Acid & Ferrous chloride  
of iron.

Blue gravel Dry Lake Tunnel, All over  
gravel Dry Lake Tunnel, Davis Gravel  
Thompson Halls, Chamberlain Quarry  
" " Dry Creek Tailings  
Bottom dry creek tunnel, Put-in

Leckie's cipher Mt. Hbk No 68 page 7.

x Carbonizing in vacuum Bork No. 57 page 1<sup>st</sup> c.

Models for different forms of carbons Bork 57 pages 19<sup>th</sup> c.

x Models for carbonizing under pressure Bork 57 pages 23<sup>rd</sup> c.

x Heated Loops Bork 57 pages 27<sup>th</sup> c.

x Clamps for securing loop from wire Bork 57 pages 31<sup>st</sup> c.

x Models experimented on for loops Bork 57 pages 35<sup>th</sup> c.

x Styles of loops Bork 57 pages 41<sup>st</sup> c.

x Thin disc apparatus Bork No 56 pg 211<sup>st</sup> c.

x Carbonization Bork No. 57. 70

x Lamp screens " " 73, 67, 74, 78, 84.

x " pump " " " 19.

x Plantation tests, apparatus & Results.

x Bork No. 63 (Lithographs Nos)

x Dynamo Mch. No. 63. 8. 77, 82.

x Glass House No. 68.

Carbonizing 82.

x For test on Manuf. near La B. 82 pg 88<sup>th</sup> c.

x Conductors for Fuel " " 103<sup>rd</sup> c.

x Data & Estimates on Exp. of house.

x Power, conductors &c. Bork 59

x Melt Exp. Lamps Bork No 25

x Tables & Loop dimensions 66

x Carbonizing Models & details 67

x Chemical Lithographs No. 50, 86, 64

x Commutators " 80. Feb 8, 80

x Clamps 70

x Wire & Allaps 40

x Thermo - 21.

x Carbonization by Lamps 82

x Reactions 32

x Chemical Exp. 32

x Sublimation 27

x Spreads & Plumes 85

Regulation & Dynamics 79

April 10-

Mr. Holger

\* Reeling heating furnace of scap  
alone driven by Holger & Moses.



\* B. Barker preparing copper conducting  
strips for joints of rails of Elec  
Tramway

Work on being finished by Andrew.

\* Dean making bits for slotting  
cords and applying paper  
down to machine for their proper

\* Under monies of Wood Lorry  
cartonized for A. M. Burns &  
Lorry coming out most perfectly.

See Note Book 57, pgs 102

\* Dr. <sup>130 to 135</sup> ~~Moses~~ trying the new pump  
springs drop but does not  
find it give as good result  
as desired

\* Reeling tramway work along  
as fast as possible  
Mr. Baithorn making wheels to bend  
and shape wood lorry

April 11

Electric Tramway pushing work on road to  
day the team gang of R. P. on the work  
Reeling the rails on all line must on  
the road today.

Wood Lorry Holly - just 20 in  
Lamps about 500 to 600. Set up  
at the time one bottle in glass  
before being taken from pump

April 12

Mr. Moore had repaired a glass  
tube made for hyasing the face  
of the manure when going in on  
the reservoir and is testing the  
pump.

He is getting up his tracks out  
of the loops in regular shape  
so as to drive bending them

The first Armature with new brush  
hidden powder and put on this  
A.M. 8:30.

Mr. S. and Hammer making  
down for steaming and building  
at same time.

Found some water that in morning  
in above  
reservoir

Residing Mr. W. H. today making  
local order list of generators 92.127

Garson and Holger operated on 13  
Lamp with their power for giving

them a glass glass appearance  
and brought them out beautifully

Holly Lamp on pump yet to night  
X giving off considerable air every

time it is heated up

For and having using New York and  
Albion as is to night and get

The first glass with name Edison  
light. See New York photo in  
at first 12 o'clock last night

Wheaton finished and delivered into  
glass house

April 13

Print glass horse making pump  
+ as per sketch by Mr. Dyer. Berts  
No. 63. page 98

Phillips. Cannon experimenting on  
+ grain loadings

Iron finished and is working the  
+ all over machine to make for cutting  
wood. Cooper Berts 51 pg 55

Calamint. test double carefully  
+ made. No. Berts - 52 pg 161

Long dynamometer test made as ground  
+ as motor in Laboratory get test  
horse power. Berts 59 65/100 ft. H<sub>2</sub>O

Walter makes out 6.3 test  
+ supply conductors necessary to  
+ supply the lamps proposed to be  
put out on Berts - Berts 53 pg 50  
total 27,000 feet  
+ Helgeir trying building new engine

And some satisfied with its  
+ action.

Commencement. I found to day in Berts  
No. 80 the notes of the experiment on  
changing angle of commutator number  
date Feb. 8. 1880 page 99 Berts 80

Crab and Hippie to day used for  
+ separating sand, one magnet above  
the other and got much better results



April 14

Worked lamp, broke glass and  
cleaned it this A.M.

Taking testimony in interference case  
Shank & Egan

The new natural gas made by the  
+ Wright Machine Works is to be used  
to run 7000 perforators

Receiving work in connection to supply  
the steam ship of C. S. Navy Co.

295-269-277 Receiving with its own  
+ compressed New Machine as noted  
845-476-465. Discharge 22 April 759  
82-179

Worked machine 148 Receiving after overhaul  
opened, 2432, fired off arms & gun.  
+ 161 fired on bushes off. Machine 027  
Blat 336 Receiving fired off bushes and  
ammunition, 295-277 fired & bushes on.  
277 & 269. Fired & bushes on.  
New Machine this case

Field went from receiving No. 845-  
after bringing up field on 476 & 465-  
Fired & ammunition off 759

Pump of No. 845 took down by shore  
+ pump and changed to be regular  
spring, adding one more trap  
and testing tube

April 15

+ Hydraulic pump determined this A.W.

• Lab<sup>2</sup> Testing with meter and Electric  
Dependence the current of the main  
lines in Laboratory. 26-1316 p4

rest of wire generally as motor with  
crescent spring dynamometer. Note 37.  
PSS by 185

+Berlin marking bump sketched B-16 68  
page 25.

\* testimony in Sharp & Egan on Intest.  
continued to day

Grady & Hippie experimenting in  
sand separation by use of Niagara  
as many as five plants one  
over the other leaving two birds  
first two measures to give as good  
results as have been obtained  
was through the process now in  
use 100 lbs in 10 minutes and  
Schwartz the same night.

New sand brass from finished  
and in use by Van Lieve made  
order of Spring metal

+ New Bot. Soc. *Spilotes* *deserti* and  
divides I. I. can't make out. *Spilotes*  
for *Spilotes* *deserti*. Book 57, pp. 75-

+ Mr. Edwin Reynolds blinks to ignore  
the resistance, fictional or real, in  
bullying, turning the case of Dynamite  
as ~~solid~~ foundation. But he  
also makes correction in light of  
Prof. Charles Mowbray

+ 9 Hops made large globes for school  
Camps received to day

~~\* Mordred's Natural Loop Carbons~~

second generation for Columbia, but  
together and running.

April 16

A lot of Moulds (mostly 3) of various  
kinds taken out of Moulds this A.M.  
+ Book no 27 pg. 115. out partly partly  
also 26 paper cartons from each of these  
out in various places

Also taking paper drawing from E. of  
Kling. taken for building and most at  
work on building building.

Also getting new sheet on receiving  
and building up the data given.

Miss Edison sketches and decided  
to give and leaving to make these  
sketches to be true in connection with  
magnets separated in the same way.

Also left Upton & back in getting up  
vacation and and condenser in  
+ sketch seems to be used in connection  
with pump experiments of the same  
by them.

Review over. Also left at least one  
hour apparently to reverse the magnets  
and brushes to control the movement  
of the car of the trainway. Sketched  
Book 50 pages 156 &c.

Arrivals of 254 disc that now has  
in use for some time has always  
jumping more or less was taken out  
by Cunningham and found gradually  
out of balance and in position  
quite over by the ultra position  
produced by that cause.

Learn to make in form and then elaborate  
attention for later to guide in building  
sketches to be true in sample and sketch  
referred to Mr. Edison Book 27 pg 71 &c.

Wrote Dynamic Machine boxed and  
skipped to A. Bergmann.  
(Quartz Fairings Spring valley) produced  
to by G. & D.

April 17

Martin Sand plaining hdy down  
x15 or in 10 min to be out in shape  
in sand board form.

When trying the electric grammer at 220 revolutions it gave a new sound to the grounds and passed through 3/4 of an inch and at 260 worth is very smooth.

Group experiments by these methods  
 \*all very exciting, useful and a  
 variety are in use in the experiment

Columbia. Two. Tanager Machine  
+ Nos. 11 & 12 Shipped to car wagon  
from water front of 9<sup>th</sup> St. N.Y.

Partition between old office and Laboratory  
 1 taken over this morning.

Upland lark *Spizella monticola* *Spizella monticola*  
 when singing 2 falling notes  
 1st range of notes, 2nd 2nd  
 3rd of 1st, 4th 2nd 201  
 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 40th, 41st, 42nd, 43rd, 44th, 45th, 46th, 47th, 48th, 49th, 50th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th, 59th, 60th, 61st, 62nd, 63rd, 64th, 65th, 66th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 75th, 76th, 77th, 78th, 79th, 80th, 81st, 82nd, 83rd, 84th, 85th, 86th, 87th, 88th, 89th, 90th, 91st, 92nd, 93rd, 94th, 95th, 96th, 97th, 98th, 99th, 100th, 101st, 102nd, 103rd, 104th, 105th, 106th, 107th, 108th, 109th, 110th, 111th, 112th, 113th, 114th, 115th, 116th, 117th, 118th, 119th, 120th, 121st, 122nd, 123rd, 124th, 125th, 126th, 127th, 128th, 129th, 130th, 131st, 132nd, 133rd, 134th, 135th, 136th, 137th, 138th, 139th, 140th, 141st, 142nd, 143rd, 144th, 145th, 146th, 147th, 148th, 149th, 150th, 151st, 152nd, 153rd, 154th, 155th, 156th, 157th, 158th, 159th, 160th, 161st, 162nd, 163rd, 164th, 165th, 166th, 167th, 168th, 169th, 170th, 171st, 172nd, 173rd, 174th, 175th, 176th, 177th, 178th, 179th, 180th, 181st, 182nd, 183rd, 184th, 185th, 186th, 187th, 188th, 189th, 190th, 191st, 192nd, 193rd, 194th, 195th, 196th, 197th, 198th, 199th, 200th, 201st, 202nd, 203rd, 204th, 205th, 206th, 207th, 208th, 209th, 210th, 211st, 212nd, 213rd, 214th, 215th, 216th, 217th, 218th, 219th, 220th, 221st, 222nd, 223rd, 224th, 225th, 226th, 227th, 228th, 229th, 230th, 231st, 232nd, 233rd, 234th, 235th, 236th, 237th, 238th, 239th, 240th, 241st, 242nd, 243rd, 244th, 245th, 246th, 247th, 248th, 249th, 250th, 251st, 252nd, 253rd, 254th, 255th, 256th, 257th, 258th, 259th, 260th, 261st, 262nd, 263rd, 264th, 265th, 266th, 267th, 268th, 269th, 270th, 271st, 272nd, 273rd, 274th, 275th, 276th, 277th, 278th, 279th, 280th, 281st, 282nd, 283rd, 284th, 285th, 286th, 287th, 288th, 289th, 290th, 291st, 292nd, 293rd, 294th, 295th, 296th, 297th, 298th, 299th, 300th, 301st, 302nd, 303rd, 304th, 305th, 306th, 307th, 308th, 309th, 310th, 311st, 312nd, 313rd, 314th, 315th, 316th, 317th, 318th, 319th, 320th, 321st, 322nd, 323rd, 324th, 325th, 326th, 327th, 328th, 329th, 330th, 331st, 332nd, 333rd, 334th, 335th, 336th, 337th, 338th, 339th, 340th, 341st, 342nd, 343rd, 344th, 345th, 346th, 347th, 348th, 349th, 350th, 351st, 352nd, 353rd, 354th, 355th, 356th, 357th, 358th, 359th, 360th, 361st, 362nd, 363rd, 364th, 365th, 366th, 367th, 368th, 369th, 370th, 371st, 372nd, 373rd, 374th, 375th, 376th, 377th, 378th, 379th, 380th, 381st, 382nd, 383rd, 384th, 385th, 386th, 387th, 388th, 389th, 390th, 391st, 392nd, 393rd, 394th, 395th, 396th, 397th, 398th, 399th, 400th, 401st, 402nd, 403rd, 404th, 405th, 406th, 407th, 408th, 409th, 410th, 411st, 412nd, 413rd, 414th, 415th, 416th, 417th, 418th, 419th, 420th, 421st, 422nd, 423rd, 424th, 425th, 426th, 427th, 428th, 429th, 430th, 431st, 432nd, 433rd, 434th, 435th, 436th, 437th, 438th, 439th, 440th, 441st, 442nd, 443rd, 444th, 445th, 446th, 447th, 448th, 449th, 450th, 451st, 452nd, 453rd, 454th, 455th, 456th, 457th, 458th, 459th, 460th, 461st, 462nd, 463rd, 464th, 465th, 466th, 467th, 468th, 469th, 470th, 471st, 472nd, 473rd, 474th, 475th, 476th, 477th, 478th, 479th, 480th, 481st, 482nd, 483rd, 484th, 485th, 486th, 487th, 488th, 489th, 490th, 491st, 492nd, 493rd, 494th, 495th, 496th, 497th, 498th, 499th, 500th, 501st, 502nd, 503rd, 504th, 505th, 506th, 507th, 508th, 509th, 510th, 511st, 512nd, 513rd, 514th, 515th, 516th, 517th, 518th, 519th, 520th, 521st, 522nd, 523rd, 524th, 525th, 526th, 527th, 528th, 529th, 530th, 531st, 532nd, 533rd, 534th, 535th, 536th, 537th, 538th, 539th, 540th, 541st, 542nd, 543rd, 544th, 545th, 546th, 547th, 548th, 549th, 550th, 551st, 552nd, 553rd, 554th, 555th, 556th, 557th, 558th, 559th, 560th, 561st, 562nd, 563rd, 564th, 565th, 566th, 567th, 568th, 569th, 570th, 571st, 572nd, 573rd, 574th, 575th, 576th, 577th, 578th, 579th, 580th, 581st, 582nd, 583rd, 584th, 585th, 586th, 587th, 588th, 589th, 590th, 591st, 592nd, 593rd, 594th, 595th, 596th, 597th, 598th, 599th, 600th, 601st, 602nd, 603rd, 604th, 605th, 606th, 607th, 608th, 609th, 610th, 611st, 612nd, 613rd, 614th, 615th, 616th, 617th, 618th, 619th, 620th, 621st, 622nd, 623rd, 624th, 625th, 626th, 627th, 628th, 629th, 630th, 631st, 632nd, 633rd, 634th, 635th, 636th, 637th, 638th, 639th, 640th, 641st, 642nd, 643rd, 644th, 645th, 646th, 647th, 648th, 649th, 650th, 651st, 652nd, 653rd, 654th, 655th, 656th, 657th, 658th, 659th, 660th, 661st, 662nd, 663rd, 664th, 665th, 666th, 667th, 668th, 669th, 670th, 671st, 672nd, 673rd, 674th, 675th, 676th, 677th, 678th, 679th, 680th, 681st, 682nd, 683rd, 684th, 685th, 686th, 687th,

Blair justified the theoretical  
fundamental resistance of letters  
& letters and is deriving means  
to test the accuracy of his calculation  
Born Nov. 72 page 684. Total  
fundamental resistance 2059 1/2 lbs

Two guests said to be reporters  
functn, here and in charge of  
New Edition

Reverse streets for tramway access

April 18

and Metch given to Art. from which  
to construct the same, pattern for  
each pump

Mr. Blue succeeded in cutting from  
the wood worked by him, a regular  
hose shoe according to new pattern

Yip - from sample of  
Main pump, cutting the pieces of  
flexible glass

Francis believes he has discovered  
the true vacuum pump

Mr. Tomlinson, three more gauges  
and straightening brads, three lagging  
for a string and three at building  
and other work connected.

James Bruce finished and being done  
the Co. Mr. is turning two of the  
pumps with same brass trip lamps

Walter Lillings mostly crushing some  
kind preparing it for the Edison  
Dr. Hyde

Pump after Francis' design made  
but broken by him before trial, fixed  
and in evening got new pump machine  
way up shape in about 12 hours. It is  
made by Mr. Anderson making new  
style pump after sketch by  
Francis. Book 80 page 1764  
designed for Columbia

Walter recording the report of the  
Annual Meeting.

April 19

Wood Corp Van Glue cutting boards  
Boys from 12 wood millers found by  
the car, putting three in frame together,  
get one two of them in good shape

See also April 13.

Cost of part: Requir & transmitt 36 pg 1100  
" Garadin Requir 36 pg 205-

George put one wood pile camp on the  
Kiln in dark room. 7 one had a  
up in the house time. 9

Measuring resistance and getting ready  
for shipping <sup>42</sup> for lamps for demonstration.  
used 125/65/170

Student preparing for practical operation with Miller

Dr. More got good vacuum at his  
\* Sprinkle in two lamps in 5 hours

Frank Pochen making new dump for  
+ new stock on Book No 18 page 39.

Our tailings Mr. C. F. Nye, assisted by brother, experimenting and testing our tailings at large lots of which have recently been received.

Memorandum No. 13<sup>th</sup> finished and mailed

Head minding. Mr. Balthus making  
\*a rough sketch of machine for  
minding wood loops.

Sketching for Mr. Holzer a record in  
which to show the order land given

+ Photo test - C. Lampe BK 82. 209  
opague. 7 1/2 Cpgs 13 Side T and line 23  
7. 1/2 Cpgs from 26 Cpgs each.

Machine No. 14. Sailed evening  
but gave no engine's certificate  
later on by Birmingham and  
to have led crew.

\*Mass on Hydrantia Pond



April 21

Sketch for armature core for motor  
15 to 21 inches depending somewhat  
on shape, from form previously made  
Bozok 12 79 page 233

Test of sparge lamp gave  $F_{\text{ave}} 9.2^\circ$   
Edge  $5\frac{1}{2}^\circ$  -  $5.17^\circ$  &  $9\frac{1}{2}^\circ$  edge  
56.7% of face Bozok 52 page 215

Sketch, design and drawing for condenser  
for two 1000 lamps.

Miter in Savane some dismounted  
slip by screw eating off in miter slip  
removing from plate in the surface  
of lignite

Pump with single tube answering for  
flange and gauge working by Bozok  
Bozok 58 page 115

Various logs sent by Van Allen from office  
from Jan 124.125 & 193 thru register

Spoke card. Mr. Wilson expressing  
you had some for safety carter to  
be used on Colombia

Campan Machine, Rotterdam and Dean at  
11000 m

Testing & design of the flame in the  
fitted in data on steam & engines and  
examining the results of quick motion  
engines

Mr. E. states as a fact that the  
X-ray not burn but on the contrary will  
colorish fire

Having made sketch of motor with  
motor



April 22

Small dynamo. He making patterns for  
gasolings of small dynamo. Also 3418  
Lamada to be 1/2. Smith made by Mr  
Munn. also 21 April.

Electric locomotive. Busch making Pat.  
X. Fine drawing

Motor. Generator in laboratory. running as  
motor to test the journal heating. found to  
heat to give an option in the journals

Thin glass and platinum medium size  
10 tubes made in on 20th by Mr. Higgs  
X. You examine to day by Hammer and  
found to be entirely free of cracks

Condenser boxes, receiving a bath in heat  
tank.

Pump. D. Higgs experimenting on single liter  
pump made by Bohn yesterday

+ Lapid. each by H. Higgs.

Vamp of Latina were made for experiment  
for Mr. Higgs. Type vacuum on 5000  
X. Higgs gave about 45 candle light  
vacuum gave. Induced by Mr. B.

X. Higgs several boxes of telephones

Good separate studies by Mr. E. and  
Higgs. direct to have apparatus made

Higgs. Stud. Mr. Higgs, manufacturing  
X. Higgs. Stud. engine from Newark N.J.  
for this evening

Blas. Higgs. Stud. by Higgs. Stud. in record  
for length of journal. in laboratory  
and some experiment made with them. Higgs  
but not very, from results

Dynamometer reduced pressure of steam  
on engine to 10 lbs and gave 10 lbs  
X. Higgs. Length of stroke to 10 lbs of the dynamometer  
would be any. Higgs. but have no effect

April 23

Hill & Cunningham gone to N.Y.  
He put up Columbia.

Black Glass taken up experiment on  
Black for sand separation.

X-band in house receiving 2200 lat.

Apparatus with three wheels arranged  
for plants. Reused to shell of one  
made for running on conductors.

Telephone receiver. One done at work in  
precious to make it all light to resist  
atmospheric influence.

Dynamo new form by Mr. House. Bells  
45% page 67. Magnets on absolute wire.

Pump double tube on within the other  
arranged for lamp. ~~7th~~ bottom.  
Sketch B. 68. page 51. also single  
tube pump sketch page 50.

Tramway station. Having designed and  
made sketch of dynamo station especially  
adapted to control movements of tracks  
of electric tramway also sketch of  
arranging machine for glass lenses.

April 24

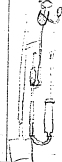
Hilton & Cunningham again in  
New York.

Spent by Francis again up and at new  
work lamp on, vacuum in

Animal. Large tank in which to read  
these notes seemed to day.

Columbia, learn from the New at  
York in Columbia that the of the  
generator was at running to night.

Boats put in front of Hydrogen press  
and run for awhile



April 26

Columbia, New York, Edison, Force and  
Cunningham in New York today  
testing lamp etc. by the high speed  
at which the machine runs (and glow  
is not very hot) the indication of one  
of them was indeed low. It  
brought back for overhauling, also  
quite a number of lamps of both  
extremes, high & low resistance  
passed back.

Mr. Edison <sup>and</sup> Mr. Stewart probably  
have felt the need of apparatus  
made with Mr. Porter on 22<sup>nd</sup>.

James, Bottom started pump in glow room  
got pump vacuum in my shot line.

Fixating device by Harris making by  
Arden

April 27

Out from High Mountain Lodge out  
by the bottom being worked & tested

Blowing Leonard's magnets into the  
tray of the wire.

Electric leading from the throat of  
and the three detached water pipes  
X-ray is forcing water back through  
them carrying with it quantities of  
dirt and mud.

By the gradual removal the line is first  
correct

Blowing Murray to bottom and made  
pump for working Murray, forcing  
by hydraulic air pump. Air through  
the Murray which is under water.

Pump of Hydrant's here working by  
power of electric motor and force  
Hydrant's stage up to 1000 ft. as  
high as desired and necessary.

Reception on board Columbia Mrs. P.  
and evening and those who were  
given tickets have gone down from  
now.

Visited Mr. Wilbur, Electric Doctor  
Holzer, Mrs. Carmichael, Mrs. Jones  
Rogers, Mr. Cairns, etc.

Pump Francis claims good pump  
vacuum in six minutes

Amputation first by Lewis forced  
ground today. One which had  
lain some time had to have  
a little amputation in consequence  
of sharpening of vulcanized pipe.

April 28. 80

Work for condenser to stick lamp  
X commenced tapping down

Geometric magnet round coil 249  
wire charged and by allowing the  
blow of iron such as wire on top  
X generated to come in contact with  
the poles. Having calculated the force  
required to force by p.p. one end from  
from magnet to be 6400 pounds

Hydraulic motor started pump against  
1500 lb hydraulic pressure pump and  
pump pressure from 500 to 600 lb. with 1000  
lb. eq. - 1000 lb. 1 x 2 in eq. pressure  
8716 lb. 2 1/2 in eq. pressure

Calculated Mr. Glavin having made a  
X calorimeter to measuring the energy  
lost in ammonia journal

Lamp hanging down of three spirals  
X pump closed to night and made  
by A.H.

Pump Granum claims to have had  
lamp ready ready in about an hour  
to seal off

Autograph. Late last night 11.30  
X Writing on 10.4 11.30 series  
X Ceramides and how much of about  
175 miles through which is 100  
gives result in Autograph.

April 29

Emp. Frances sent records 12 to 13  
Xlbs of Mercury per Minute (Borr no.

low vacuum than usually. Also  
if the relative value of very high  
vacuum

Wood broke out and cartoned by Van F.  
Korn put in lamp <sup>194-195</sup> ~~temperature today~~

Condenser broken. After some delay  
drawing condenser from Dept.

Setup and sample set up by Morse.  
Y. Hammer obtained vac. in a lamp on  
Korn. Lamp in 5 hrs. showing much  
better performance than in the lab.

Cleaning Mercury. In main vac. iron  
pipe secured to large bottle to involve  
endless for cleaning mercury.

Wood Milling. Barstow and Dean  
made new cases for record miller  
and tried them good results

Atmospheric vacuum. Hammer has been  
several days running a lamp of much

April 30-

White Fly Camp exhausted on road  
X in dark room

Mr. Dynamic. John W. making pattern  
for casting the dynamo. Small  
X for piece where few machines are used.  
Brush holder. Between frame making  
patterns for right & left brush holders.

Monitors being put down X

Tramway rails arrived as far as the  
X the road permits

Model for lamp holder finished and in  
X use. works well

Spoke board for Columbia making  
X by Lindine

Several styles of design for relieving  
X lamps of sudden jolt being tried

X interesting talks practicing. Inter here

May 1.

Cylinders up and shipped to the  
X Columbia

New clamps Mr. Bolshin devised &  
X sketched new form of clamps and rollers  
for rolling wire for clamps. B. 57. 1189a

Conductor to lamps up. R.R. 6 clamps  
X each of No 10 wire being run

Mt. Gasser continues line of experiments  
to ascertain whether or not the rolling of  
X copper plate does not injure the surface  
of copper causing unwanted details thereon

Calculated to lose energy in form of  
X Boole 72. 24- 14.8%

Yug board & wheel for making and  
X making connection to representing mag.  
on magnetic going through wire motion to generator

Cleaning boiler hood blowing out boiler  
X and cleaning same

Experimental Notes of carbonization of  
Mead, page 104 of Note Book No. 5-2  
dated October 22, 1919, 9 a.m.

Exp. Notes on changing angle of descent  
later written Feb. 5, 1920, p. 76, 80, 99.

Costs of Reactions & Transmutations, Note 58, p. 111  
" " Faraday Machine " 59, p. 120



**Mott Journal #2 [PN-80-05-03]**

This is the second of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period May-June 1880. The front cover is labeled "151" and is inscribed "2nd" and "1880." The book contains approximately 40 unnumbered pages.

May 3

Experiments to determine whether loose  
acid may not cause separation of a  
X mixture of amalgam putting copper  
plates on top surface mercury covered with  
acidic acid mercury can be brought

Pump John all taking careful measurements  
and making diagrams of one of the pumps  
X from dash come from which others  
may be made of waste etc

Reeds wood being worked on milling machine

Continued list of energy lost by friction  
in journals of armature Bk. 7 p. 1113

Planning car casting division

All factory being cleared preparing to putting in  
X pumps and lamp manufacturing apparatus

Wrote letter to Mr. J. H. & C. Birmingham  
X re Columbia again to day

May 4.

Wood Ramon Lamp 7 1/2 65 ohms 1st  
X-ray conical Bottle 63 am page 9

James Miller making of sand muller for  
X-ray and Experiments by Hammer & Ott  
small in tank on pump off in good shape etc.

James preliminary work on pump commencing

Yp Bottom making 476 gauge muller as per  
order of Mr. Egan - Smith Bottle No. 63 page 83

Electron Calorimeter test continued by Olvera

Mr. Loring making diagrams of <sup>apparatus</sup> for  
for working to be used in old faraday  
box which they are putting down finally.

Conductivity South from Liège to Schöen  
X to each line.

Lead glass, Pelzer here with two samples  
of lead glass tubing 150K ohm with  
which to make wooden mould.

Elm Eng House set for inst. paper & etc.

Bulk Mould arranged on new base and  
with spring attachment for opening.

Amalgamated Mercury Dr. Merz Amalgamated  
X-ray with 15 gms. to experiment on its  
ability to discharge itself.

Size for sand experiment circular in form  
X-ray of different size with finished by Loring

May 5.

Mercure Amalgamat by Mises found

This is coming to have purified itself.  
Amalgam was this morn. used for 2 days from 4  
to 10 a.m. some of it was changed in the house

27 lamps Hammer informs me now taken off  
the pump yesterday by himself alone

Clamps of nickel, copper and platinum tried in  
Xamps. Lamp of light platinum clamp put  
up to show how by Mr. Brown but it was too

expensive to use from station 17 and  
Xonly did show and put pressure to carrying

Continued Halcimus tried in lamp by Mr.  
Halt and in fact the one found

Just corrected by me Mr. Brown  
900 is another name for it. See page 15996  
B. 15996

Xthis one can find out any number of things

One from New Mexico very rich brought  
Xby gentleman from Silver City N.M.

Oliver Cannon experimenting on sending  
glass globe <sup>in vacuum</sup> by means of  
Xnot find it so simple and direct and  
contact, having water and

Refracting Magnets for same purpose  
Xsame for same matter by Cannon

Pump Hammer notices that Sponges drop  
pump starts at point where dropping  
Xmissing still the column is not  
seen at that point that shows irregular  
fine cracks and one larger one

Thursday May 6

\* Full moon, 4 minutes before 11 by the clock

Many have been caught making gangs of  
\* some 100 in all for making holes from  
cutted wood.

Colar... not left until 11.00. Better than  
in 1898. 17° difference in inflow  
\* and outflow. The only kind the  
original lamp of air in water varies  
marked to day. May 16. 68. 16. 1/2 p.m.  
Engine in motion by 11.00. 11.00 p.m.

Two exp. passed on September 1898. The  
Artificial Malaria, 1. See 1898. 1898.  
It was to solidify in 1898. 1898.  
\* Xenoderm to be used as the 1898.  
as had not moved to give the  
sufficient pressure. Salty from  
the exp. had to be used as sufficient.

Several losses. I can remember 1898. 1898.  
not making malaria. 1898. 1898.  
\* began in 1898. 1898. 1898. 1898.  
high in 1898. 1898. 1898. 1898.  
then in 1898. 1898. 1898. 1898.

Friday May 7-

Stalings & Stalings from 1898. 1898.  
\* used from 1898. 1898. 1898. 1898.

Blanks of 1898. 1898. 1898. 1898.  
\* 1898. 1898. 1898. 1898.

Made of 1898. 1898. 1898. 1898.  
\* 1898. 1898. 1898. 1898. 1898. 1898.  
\* diagram made by 1898. 1898.

Clamp machine 1898. 1898. 1898. 1898.  
\* 1898. 1898. 1898. 1898. 1898. 1898.

Growing of 1898. 1898. 1898. 1898.  
\* 1898. 1898. 1898. 1898. 1898. 1898.

Messinger 1898. 1898. 1898. 1898.  
\* 1898. 1898. 1898. 1898. 1898. 1898.  
1898. 1898. 1898. 1898.

Waring 1898. 1898. 1898. 1898.  
\* 1898. 1898. 1898. 1898. 1898. 1898.

Large 1898. 1898. 1898. 1898.  
\* 1898. 1898. 1898. 1898. 1898. 1898.

Saturday May 8.

Went and then castings for E.C.  
~~Went~~ received the E.C. the week  
 put in case.

Went to see the doctor about  
 X-raying the leg. Saw Dr. Van der  
 Vliet.

Went to see the doctor about  
 X-raying the leg. Saw Dr. Van der  
 Vliet.

Went to see the doctor about  
 X-raying the leg. Saw Dr. Van der  
 Vliet.

Sunday May 9.

Went cleaning out the engine  
 room. And had dinner here  
 alone and running the motor.

Went to see the doctor about  
 X-raying the leg. Saw Dr. Van der  
 Vliet.

Monday, May 10

better to be a Latin this time.  
 A.H. <sup>1898</sup> ~~1897~~ Nov. 16. Wind, lower down  
 and falling, fine sunset in all. 1898.  
 Latin day. Saw some out and in, <sup>very</sup> yellow  
 clouds at once. Birds and a few  
 they came out more freely.

1899 the Herring River, 1/2 mile from  
X and 1/2 mile from the 200 ft. line.  
Herring Lake, 1/2 mile from the 200 ft. line.  
Mud of Herring.

Conn. Mach. & Tooling Co. Hartford  
+ and son.

Walter House, Edgar & Thomas Campbell

Male. Flies on grass in low  
grasses around the water  
to the common with wading  
*Thompson's galathea*.

Wieder: Linden, Kessing, Model, Ring, Pustel  
1814 Andre, Kessing, Ring, Pustel, Linden

*Antyrophilochne* means one who is  
defying being with plain being put  
to death since struggle if now.

Small lamps, and a lamp with small  
slants of copper, platina and Nickel  
have been fabricated to test coffee slants  
as well apparently as any other.  
Mr. Edison observed a beautiful  
flame appear and about the same  
times on turning the lamp the  
same action was observed in  
other slants showing the action  
to be the spreading out of the plates  
which Mr. Weston purchased. The  
result was attended with some  
difficulty and showing  
that coffee will not do for the  
purpose.

Autographs. Pearson found that in using  
x cheap, soft paper on fire, that but one  
pole from dynamo current seemed to start  
the papers.

Tuesday May 11

Went to Laramie to day. Leave  
for a trip South, expecting to  
remain about a ten days.

Coal Sheds of Union & Southern R.R. here  
have good sides for 100 tons each.

Read no. 4 E. Laramie, all bad as we  
have ready to use in the car.

Mercury experiments by Regent of Minn.  
Edwin Hansen showed the action of  
mercury on *Staphylinus*.  
A bit of *Staphylinus* was placed into  
the jar of killing gas: passed over  
mercury, above. In 1/2 hr. was placed  
into the jar, showing a certain black  
color & mercury was converted by  
platinum wire, at 200° B. no. 111.

Prepared Synonymic list of *Mercuri*  
*Xen. Salicaria*, March by Regent.

Postscript: Van Liewe carmen  
three pieces of wood logs cut  
out by saw machine.

R.R. connections made with rails and  
ferret board put in by force.

Large Lamp. Mr. Edson made sheets  
of the *Anderson* Lamp. connection from  
through the *Anderson* column similar to  
the *Anderson* in *Anderson*.



Wednesday, May 12

Milt. sent to N.B. to see Butler  
about letter for Mr. Balch and  
get names of names of letters in 1366  
R.

Large Globe Letter from Frank. by  
Bureau on New R.R.

R.R. Motor raised off of floor and  
runs like a top.

Ernest Volker copies picture of  
Milt. in blue ink.

General Lave. Andover on western Milt.  
Lave. Lave. Milt. Lave. Lave. Lave.  
Xyrene. New on engine on the  
engine.

Tests of Milt. by Milt. Both at 5 p.m.  
Milt. at 5 p.m. with Bradley Milt. for  
power and same running.

For decomposition of Milt. by  
by reduction to impalpable powder  
Milt. in burner gas flame. N. G. Milt.

Impalpable powder dropped into iron bit in  
combustion furnace (Milt. on bit) same bit  
good.

Plant drainage and Milt. (Milt. on bit) same bit  
good. made and sent to Am. Milt. Milt.  
Milt. Milt.



Friday May 14.

Sketches for application to  
the Transvaal, eng. brought in  
also put in the boiler. North the  
case with. Better desired for the

Motor test U.S. Page 61 and  
notes by putting on in Motor test  
power in shunt current  
Small test. to test small dynamo  
Killing made by Anderson

One engine fitted with belt and  
pulley gear and test with suffi-  
cient force to turn over out of station

Carbonization. Several trials of  
x base iron came out badly most  
on extraction

Plan for the engine in the electric  
x topic of discussion

Armature for New dynamo will  
x enough 2000

Saturday May 15

Notes Mr. Davis in New York for  
getting data from Baber & Wilson in  
relation to their boiler, economy etc.

Sailing 3 bags from Haswell Red Sea  
Mr. J. A. D. Williams 720 Chestnut St.  
St. Louis Mo.

Drawing of the Transvaal sketches of  
different ideas. Book 51 pages 167-170  
by Baber & Wilson on the ground  
large motor in pg. 179

Eng of the Transvaal test with  
x and repairs of

Flamingo Sunday, prepared some  
x Part of the anti-g. station. Enclosed  
carbonized wing. No work.

Motor test made by Mr. H. L. L.  
Book 48, pg 77

Monday May 16

Engine Hood took bread out of dining  
car engine. Call and clean up.

Carving shop. Andrew started on new  
Minnies yesterday and finished it today.  
See also Engine today.

Pump glass delivered this A. M. and  
was commenced on them.

Milk Eggs by Union Post 4.8.39 85

Group boards ship to Butler at  
New Brunswick

Cartonage. Stamps sent one old  
in 10 lbs. press and prepared some  
back plates for cartonage 3. m. of 12  
get 10. get 10. one. then ordered carton

May 18

\* Milk farmer for in which to use  
back plates ordered by Deanne  
Bert No 57-page 124

Tuesday May 18

Lincoln moved from dynamic station  
into old station to be used for engine  
for tramway. The note with one  
machine or was over the full length  
of track and return with the two  
gondolas on tracks can be seen down  
to end of track and back with 9  
passenger without any difficulty.  
guide a party of foreign local officials  
enjoying the view and a London  
citizen.

Milk for sale in 10 lbs. press and  
back plates for cartonage 3. m. of 12  
get 10. get 10. one. then ordered carton

Sparks in pump made and expanded  
for West Point Military academy

Poland machine being made by Brady

Fiber. 8 Bar-pier lamp. exhausted  
in pump.

\*



Tested four Best-Blow Candles at 103 2720  
gave from 30 to 32 candles

Estimate for the tramway, Borth & pg 199  
7.10 mds: 30,000 for Engine - 22 wheels, etc

Friday May 21-

Eden in refuge, Mr. Edson  
passed some of the hills in  
valley which had been passed  
by Mr. after the usual mine walking  
and found quite a quantity of new  
bearing gold

Tested Mr. Ripley making thorough test  
of small dynamo as generator and as  
motor

Construction of large machine being  
worked by Mr. Ripley and Mr. Edson for  
experimental purposes

Wrote Milling on 9 am machine. It was  
X polished and secured to begin working

At about 11.30 P.M. & fully in a number of  
hours got for all answers at once.

Thomas Gordon. In converting Cupric  
sulphate into Cupric sulphate by means  
of Potassium Chlorate & Hydrochloric  
acid, using Florence flask over steam  
bath. It was noticed after trials over  
bath of gas had taken place for  
some time, a loud report accompanied  
by flash of light, took place in  
the flask. Two came, one walking in  
flask.

Worked on the glass blowing machine  
which on simple gang-laying tool  
dynamo. Then ran at 100 volts.  
The battery was in a room  
making lamps, occasionally  
stopping to discuss gear in  
R. S. and then changing the  
circuit and perhaps on  
engine motor

Saturday May 22

Testing Bask. pl. Lamp at 10 ea.  
gave 9.8 per. 2.00 per. Bask. 4.8 by 14.  
Kills 1000's of m. of the 100  
each heard earlier.

\*Hudson Mrs. Bailey.

Sunday May 24.

Stamps. Sun. up to 100 by drawing  
of 1000's in the middle of the middle  
Mo. a fine one, maybe 100.

1000's of 1000's by 1000's  
Am. M. 1000's plates 1000's  
first class.

Small dynamo 1000's for 1000's.

\*1000's of 1000's of 1000's  
\*1000's of 1000's of 1000's  
\*1000's of 1000's of 1000's

\*1000's of 1000's of 1000's  
\*1000's of 1000's of 1000's

Sunday May 25

Magnets. 1000's again. 1000's  
gave 9.8 per. 2.00 per. Bask. 4.8 by 14.  
Kills 1000's of m. of the 100  
each heard earlier.

\*Hudson Mrs. Bailey.

are the same in substance, and their church  
government is on the same principle. They  
all more firmly than any other great body  
of Christians adhere to the Calvinistic faith.

Parlagraph

1000's of 1000's of 1000's  
1000's of 1000's of 1000's  
1000's of 1000's of 1000's  
1000's of 1000's of 1000's

1000's of 1000's of 1000's  
1000's of 1000's of 1000's  
1000's of 1000's of 1000's  
1000's of 1000's of 1000's

1000's of 1000's of 1000's  
1000's of 1000's of 1000's  
1000's of 1000's of 1000's  
1000's of 1000's of 1000's

Saturday May 22

Testing Bask. fls. lamps at 10 am.  
gave 9.8 per hour power. Bolt 48 p. 147  
Silver Motor die 10-1/2 in. of the die  
said lead engine.

\*H. H. H.

When working on the river he is described from about  
1870 to 1875 as being a very good man. He was a  
very good man and at one time he was a  
very good man. He was a very good man.  
He was a very good man. He was a very good man.  
He was a very good man. He was a very good man.

Monday May 24

Sunday. Sun. up the coast by drawing  
\*H. H. H. in the water at 10 am. 10  
Ma. a former engine now

60 ft. engine of 10 ft. diameter by 10 ft.  
\*H. H. H. in the water at 10 am. 10  
first case

Small dynamo power for ship

\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10

\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10

Tuesday May 25

Machine in again. 10 ft. 10 ft.  
\*H. H. H. in the water at 10 am. 10  
large pulley

\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10

\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10

\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10

\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10

\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10  
\*H. H. H. in the water at 10 am. 10



Wednesday May 26.

Electric communication opened between  
\*dynamic cells & laboratory

Joe Head has and his partner engine  
and 2000 ft. of wire around the house

Built large dynamo with same results

\*Planned Mr. Bartlett

Summation established from words since

lowest 6.65 12.8 13.37. Highest

Rose 38.76 11.40 31.06 per unit

Broth No. 32 page 11712. Area in Steam

fact. new high after release of water

New home, Orange, Texas & Mahogany

only lost, San Domingo. Mahogany, &

Highway with gained not lost, all

which gained from 4 to 20 million

which the same least, barabala

the highest

Under the working on a new gas

\*Karlsson for other globe

Thursday May 27.

Walter Bailey, Wilbur & Lawrence

Walter Bailey, Wilbur & Lawrence  
\*ample, but not holder in large quantities

Walter Bailey, Wilbur & Lawrence  
\*ample, but not holder in large quantities  
in Carlensing. Plaster, making more  
of them.

Walter Bailey, Wilbur & Lawrence  
\*ample, but not holder in large quantities  
gas, for the

Walter Bailey, Wilbur & Lawrence  
\*ample, but not holder in large quantities  
in Carlensing. Plaster, making more  
of them.

Walter Bailey, Wilbur & Lawrence  
\*ample, but not holder in large quantities  
in Carlensing. Plaster, making more  
of them.



Sunday May 30

Mission exp. by Cannon examined by  
Mr. Edison. did not describe the  
apparatus as it was exp. 100 ft. ago.

Frank's test by Francis to show the  
effect of rain and damp weather with  
one battery 30 ohms resistance on  
this case Mr. C. says 5 miles across  
about 1/2 of current about the same  
used in work 1.9 cells

Edison's experiments on noise of  
B.R. Bell telephone without battery.  
Not so much noise with one cell battery 9 ft  
common scale

Once Mr. Edison testing the new  
and battery sent by Mr. Langley  
and directed Cannon to experiment  
in unimpaired coating from gold so that  
it may be action upon by mercury.

May 2  
Not started  
May 3  
May 4  
May 5  
May 6  
May 7  
May 8  
May 9  
May 10  
May 11  
May 12  
May 13  
May 14  
May 15  
May 16  
May 17  
May 18  
May 19  
May 20  
May 21  
May 22  
May 23  
May 24  
May 25  
May 26  
May 27  
May 28  
May 29  
May 30  
May 31

Monday May 31

Telegraph report by telegraph safe  
at Rio Edison Light working well

Over some packages received and time  
by Mr. Edison. J.D. Denton. Report  
from the organ

Over the apparatus for enlarging on  
gasoline was up and to day for 2.5 in  
returning order in very high water  
vacuum

Tests of dynamo. Mr. Weston continuing  
series of experiments to determine cause  
of loss of power in the construction of the  
generator and to make economy in  
the matter of proportioning the same

Heater made by Tordens was tried to  
lengthen the time to work by 2.5 in and  
in gradual flames

Many of the men absent. Deactivating

Tuesday June 1.

Section Book Mr. Hennig drawing and  
Xtending means of applying <sup>various</sup> ~~various~~  
pencil lines to getting of the origins  
and made diagram of centrifuging

Anders Gustaf, his high big, round  
conductor pipes and a desire as much

Welding, Carpenter, Smiths at noon.  
Spent the morning in apparatus.

Kitchen 1766 & each side for dinner &  
 one back side of Room for stool & wash  
 breakfast bench for 5 to 6 seats at champagne

Butas some California mining men to  
show Mr. Baum where the  
hydrothermal lithium water is passing  
the current through salt water also  
Mr. Baum

Advice: Mr. Moore may have been  
fire reducing <sup>if alarm</sup> ~~causing~~ <sup>by</sup> ~~clothes~~ <sup>on</sup> ~~on~~  
but attempts to day were ~~unsuccessful~~

Turning Back-filer, John B. Lueder  
\* Machine for turning back-filers etc.

Wednesday June 2

Sketch made by Mr Edison Intuacy

Wm. B. G. of Tracy, Madison, Feb.  
has admitted your voluntary grant to  
F.A.C. for magnetic expansion to chapel  
transmission of the falling on or 20th. Release  
of Jordan, has to leave Portland of the application  
form of 4th.

Work started by the Hill Mine mine for  
nearly ten weeks in consequence of absence  
the sickness of Hammer. 100 finished by  
Hovors yesterday.

*Allyl isopropyl ether* is reduced in presence of *Allyl* today

16. Mr. Hering is making calculations  
Xmas clearance for living Mason's church.  
and here note for the training. 16-5.

*Leptocarpum Van Cleeve* germ. van  
 peng. perfect sweet flowers. L. Flamma  
 fixed up. Flowers in connection with  
 (Lusine Gas house in small jar was made  
 on growth in)

Thursday June 3.

Walter Men preparing to collect  
pipes for engine supply, and  
near the center of pond.

Gathered new Stewart Latta and and at  
up

Visited from Guts from Belmont S. Co.  
here are transported great amounts of  
in during the winter of the woods from  
some had started the 12, 12. Mr. Marshall  
coming up with full load. at one min.  
the 22.5 ft of track against 2250 Rev.  
of American.

Minerals. Mr. Balthasar has been preparing  
plants to be turned on Latta and  
Furn off in some looks for another  
kind in lamps.

Black riding. Seams common in one  
another mixture of riding wood. inside  
tent out same as in other machine  
look outside cut with hot melting

from its end similar to auger. and  
the black caused to revolve on double  
logs or carriage.

Leave part of castings for cars to  
Kerr used this A. M.  
Walter King to carry Latta fire by Mason.  
U. Friday June 11

Geo. Miller from Mr. Clark finished  
calculating the gas of the motor force  
on system as laid down to the lamps.  
Kerr's Book No. 66 pages 130 to 142 146 150  
The lamp of 1500 feet wide 30 lamps given  
three each. the gas is from 100 at machine  
to 876 at last lamp.

Alfred I discovered last evening that  
some of the large globes were breaking  
in consequence of swelling of the fire  
ports. Mr. Howard getting up there and  
the missing found about the de-  
hottens

Saturday June 5

X Bear frame disassembled getting out.

Checked Mr. E. went to New York on 3:20  
Train June 5. in trip with Mr. Williams.

Training run in Boston Harbor.  
came against bumper pretty heavy but  
X severe damage done.

Experimented with alternative but in motor  
in laboratory. And connected with  
hydrostatic pump for pressure in plant.

Used loop lamp. 15 iron being on  
main wire down stairs in laboratory  
for lighting.

Magnetic induction apparatus finished  
by Anderson no through but yet good.

Bumper being carried down to  
X lamp factory.

Visited Mr. Goddard & Mr. Govey.  
Had ride on road car off track at 10:30  
pm. In our hub nothing broken.

Magnetic induction apparatus built with  
X good results. Friction greatly increased by  
the hammer.

Aluminum experiment to reduce loss  
X made time by R. Morse unnecessarily.

Work done - Mr. Baithan and West  
born on lamp making machine etc.  
on turning back fibers. Conductor.

For electric arc made for outside globe  
Bradley and Anderson on apparatus  
to test magnetic friction. E. C.

Stomach on pump. Iron on them on  
extending to side of R. R. Gang on  
laying conductor. Three moving  
pump. Conductor on small dynamo.

Experiment of return of water by addition  
X of salt. Illuminated made for measure  
ing the increase of latent heat conductivity  
the hypothesis.

Monday, June 7

Test made of Small dynamo by Wilson

Pres. Monroe was Washington Post yesterday  
Xmas letter by Mr. Edison

Notes listed by Mrs. Edison

*Altemeria radum* by Heat of electric  
X-rayed this A.M. in Brown's carbon  
brother

Xenopus laevis A.M. in Brownish carbon

Visitors	Prophet & some other	under way
X 2000		

Visit	Barbados & some other islands,		
Home			

Mercury barometer paper being cleaned  
in ethanol

Mercury pump pipes being cleaned  
by steam

Single Lamp used but heater

*Alfred. Old Mr. Edwards left in Canada  
with McGee.*

*Karin M. Hering*

Brush Ridge for large 12p H.P. *Syringas*  
Kokshetau & given Mott. *penicillata* to *penicillata*  
D.C. Hearings see May 27.

Shaded & green North branching to 2000  
P.C. Drawings Sec. May 27.

(Hatched on end of fibres Book 57. Age 123)  
Book 57. 201 Camp. Makers.

Box 57. 201. Camp Mahan.

Eggs to determine fall of Potentilla  
in Lamb system. 7th dist. forms of  
about 100 then each equals 1 Lamb each  
Bast fibers. Ready for use in  
sufficient to cut out one or two  
fibers a piece and very much



**Mott Journal #3 [PN-80-06-08]**

This is the third of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period June-July 1880. The front cover is labeled "152" and is inscribed "No. 3." The book contains approximately 40 unnumbered pages.

PN-8006-08  
E-326

Basal film lamp tests  
No 39 - 216 to end

At 1000 ft. elevation  
detected the following  
from 10/14/10 to 10/15/10

Tuesday June 8

Our Fredon bags of rice from  
Virginia Minor sea this morning  
Virginia also two bbls of rice from  
Virginia, in yara. Two bbls of rice

Shirley, Mr. Bailey, Diego de Castro  
Gonzalez de Lohé, & Mr. Pooka

Two, from Anna R. being drawn up for  
her on the morning of the 8th

Mailed in within 15 cartons  
Bastard, from the South, in the Atlantic  
by Mr. E. J. Flannery to mail.

Washed Mr. E. being a person with  
you attached as now and under  
forced up through the canal large  
to be washed. N. G.

Plaster Ballston in N.H. to meet  
his sister

Charles Wood run engine & action  
from us to more test of aa of Plaster  
(get particular) 94 1/2 to 79 7/8 - 101.  
in candle runs from 14 1/2 to 12 1/2

Wednesday & Thursday - E.R.R. by  
Albany. I was away during the  
5000 ft. apparatus on which  
Moffat was at work Sunday, pro-  
cessing on Alder gas & was  
kept in ignorance some and that  
some repairs would have been made  
themselves, find also that at  
York Vermont, Francis Miranda  
of the pumps and causing them  
to Lamp factory, Sunday, etc.  
at work on engine for East River  
the manner of which was similar to 44.

Friday June 11.

Charles W. Edison on 11 29.

Work under Dean tried the new  
Klaus & wood millig but is  
not happy

Magnetic South which being made  
by Mr. Kumi.

East River some getting out by Bradley  
and carbonized

Quadrant under, five are now  
in course of construction

Magnetic gas which of made by  
Mr. Edison.

R.R. now working on Edison

Saturday June 12

Back from Mr. C. Emma's lab. Back  
from church in evening 11 1/2 hrs.  
123 ju. in paper & wood. One lamp  
of back & adms made to day. in 1/2  
gave 330 chms. 4 1/2 to 1100 200

Small general. soft iron magnet  
knew ready 4 push together  
Year began making following things  
the plating

Wider. P. 1000 of 10000000

for 1000 10000000 1000 10000000  
1000 10000000 1000 10000000  
1000 10000000 1000 10000000  
1000 10000000 1000 10000000  
1000 10000000 1000 10000000  
1000 10000000 1000 10000000  
1000 10000000 1000 10000000  
1000 10000000 1000 10000000

Monday June 14

the plating experiment continues  
Koching by Mr. Edison, using only  
leather water and oil

Plating Sun of Tracy contains the  
most trouble while on Edison's  
Koching was done in their broken  
Koching machine. In no way did it  
the material up of decline & was in the

New lab. packed & shipped to San Francisco

Back to lab. Little Back 13000 101

Back to lab. Little Back 13000 101

Back to lab. Little Back 13000 101

Back to lab. Little Back 13000 101

Back to lab. Little Back 13000 101

Best film today. worked with the  
instruments for cutting out film as  
soon as Laburnum got out some  
samples.

Also. Exp by Mr. Green.

Tuesday, June 15

Aluminum specimens by Willis  
Xlamson between string conductors.

Put plus lamp bulbs at 45° and 25°

Put in long tubes - 100 ft. in length  
put in lamp bulbs to 100 ft. in length  
also around lamps. (Box 22, per 112)

Lamp. Early, now, after 100 ft.

Start for morning, fine pump

R. B. Mott, cross connections and  
Xaxis and small amount

Earl hand on hand, check given  
to check by checking rails in joint  
of Mott. After by Mr. Horing

Copper cylinder, pattern made for  
Xasting to try to determine the  
pattern. Friday, June 11.

Laying conductors, work suspended  
for a few days. No more rain.

Glass machine, assembling and  
Xappearing. Then indicated the  
first one, making it pick off  
the lamps. Mott.

Wednesday June 16

Tailings & bags from Lagana River  
& from Anne's mine

Springe's assay. Exp by Monro

Killed Mr. Salmon. after a trip to the mine

Attention to appearance under microscope  
near surface. On E. thought of *Strophomena*  
*Karlens* which supposed to have formed a  
cave & which bore the *Strophomena*

Specimens of some of lamps by Prof.  
Strong. All have carious & some have  
two lines of hyaline

Left back view of Ann Road. could  
about ten hours to night on light

Sum of West River. Estimated 1914. Garro

Thursday June 17

Lamps. *Eobryozoa* with *Nicotia* *baileti*  
and a half length corals made for  
Killing double lamp with a small  
surface of ore.

Poly. by *Strophomena* - from a small  
X-ray put in the case

Exp. *Strophomena* in high solution. Made  
Lagana river. *Strophomena* *baileti* &  
*Strophomena* *baileti* & *Strophomena* *baileti*

*Magnum* *apicalis* glass. *Strophomena* *baileti*  
*Strophomena* & falling *Strophomena* *baileti*  
along the *Strophomena* *baileti* in the river

*Magnum* *baileti* small *Strophomena*  
*Strophomena* *baileti* for 2. *Strophomena* *baileti*  
a small *Strophomena* *baileti*

Then Day River in the East River

Friday June 18

Cartography of Lake with tracing  
of paleogeography to study the effects  
of paleogeography on the evolution of  
the lake. (see map on p. 167)

Revised map of the lake with  
high mountains and other features.

Study of the lake with a view to  
determining the cause of the lake's  
formation and the effects of the lake  
on the surrounding area. (see map on p. 167)

Study of the lake with a view to  
determining the cause of the lake's  
formation and the effects of the lake  
on the surrounding area. (see map on p. 167)

Small piece of paper with the  
name of the lake. No information.

Small piece of paper with the  
name of the lake. No information.

Revised sketches of the lake with  
the name of the lake. No information.

Saturday June 19

High air engine on which the  
lake is shown. (see map on p. 167)

Engine long barrels by Fries

Small piece of paper with the  
name of the lake. No information.

Small piece of paper with the  
name of the lake. No information.

Small piece of paper with the  
name of the lake. No information.

Small piece of paper with the  
name of the lake. No information.

Small piece of paper with the  
name of the lake. No information.

Small piece of paper with the  
name of the lake. No information.



Monday June 21.

*Siganus punctatus* bell. changed to *discolor* Scott.

*Richardsonella setacea* 10. 6. 1911.

Half camp. Tides 20:00 to 22:00 at 11.

Sardis

*Spicific gravity: Confirmation for listing*  
*by Merri Bank 68, 69 & 123*

Tras for R. R. being drawn from Depot.

+ Station of Penn. R.R.

Class Minutes Learning 21.8

Engine and ship

Klänge. No. 1110. *Stenobothrus*

Position in 1912 - 1913

Ref. stain put in & Neubauer case

best in

Tuesday, June 22.

Half Camps two in series left at 1:30.

handles to test staying qualities

Postage 21¢ - bills are 4 1/2 in. Three New  
Resist. color 67, 69, 81  
R. 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99 101 103 105 107 109 111 113 115 117 119 121 123 125 127 129 131 133 135 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 169 171 173 175 177 179 181 183 185 187 189 191 193 195 197 199 201 203 205 207 209 211 213 215 217 219 221 223 225 227 229 231 233 235 237 239 241 243 245 247 249 251 253 255 257 259 261 263 265 267 269 271 273 275 277 279 281 283 285 287 289 291 293 295 297 299 301 303 305 307 309 311 313 315 317 319 321 323 325 327 329 331 333 335 337 339 341 343 345 347 349 351 353 355 357 359 361 363 365 367 369 371 373 375 377 379 381 383 385 387 389 391 393 395 397 399 401 403 405 407 409 411 413 415 417 419 421 423 425 427 429 431 433 435 437 439 441 443 445 447 449 451 453 455 457 459 461 463 465 467 469 471 473 475 477 479 481 483 485 487 489 491 493 495 497 499 501 503 505 507 509 511 513 515 517 519 521 523 525 527 529 531 533 535 537 539 541 543 545 547 549 551 553 555 557 559 561 563 565 567 569 571 573 575 577 579 581 583 585 587 589 591 593 595 597 599 601 603 605 607 609 611 613 615 617 619 621 623 625 627 629 631 633 635 637 639 641 643 645 647 649 651 653 655 657 659 661 663 665 667 669 671 673 675 677 679 681 683 685 687 689 691 693 695 697 699 701 703 705 707 709 711 713 715 717 719 721 723 725 727 729 731 733 735 737 739 741 743 745 747 749 751 753 755 757 759 761 763 765 767 769 771 773 775 777 779 781 783 785 787 789 791 793 795 797 799 801 803 805 807 809 811 813 815 817 819 821 823 825 827 829 831 833 835 837 839 841 843 845 847 849 851 853 855 857 859 861 863 865 867 869 871 873 875 877 879 881 883 885 887 889 891 893 895 897 899 901 903 905 907 909 911 913 915 917 919 921 923 925 927 929 931 933 935 937 939 941 943 945 947 949 951 953 955 957 959 961 963 965 967 969 971 973 975 977 979 981 983 985 987 989 991 993 995 997 999 1001 1003 1005 1007 1009 1011 1013 1015 1017 1019 1021 1023 1025 1027 1029 1031 1033 1035 1037 1039 1041 1043 1045 1047 1049 1051 1053 1055 1057 1059 1061 1063 1065 1067 1069 1071 1073 1075 1077 1079 1081 1083 1085 1087 1089 1091 1093 1095 1097 1099 1101 1103 1105 1107 1109 1111 1113 1115 1117 1119 1121 1123 1125 1127 1129 1131 1133 1135 1137 1139 1141 1143 1145 1147 1149 1151 1153 1155 1157 1159 1161 1163 1165 1167 1169 1171 1173 1175 1177 1179 1181 1183 1185 1187 1189 1191 1193 1195 1197 1199 1201 1203 1205 1207 1209 1211 1213 1215 1217 1219 1221 1223 1225 1227 1229 1231 1233 1235 1237 1239 1241 1243 1245 1247 1249 1251 1253 1255 1257 1259 1261 1263 1265 1267 1269 1271 1273 1275 1277 1279 1281 1283 1285 1287 1289 1291 1293 1295 1297 1299 1301 1303 1305 1307 1309 1311 1313 1315 1317 1319 1321 1323 1325 1327 1329 1331 1333 1335 1337 1339 1341 1343 1345 1347 1349 1351 1353 1355 1357 1359 1361 1363 1365 1367 1369 1371 1373 1375 1377 1379 1381 1383 1385 1387 1389 1391 1393 1395 1397 1399 1401 1403 1405 1407 1409 1411 1413 1415 1417 1419 1421 1423 1425 1427 1429 1431 1433 1435 1437 1439 1441 1443 1445 1447 1449 1451 1453 1455 1457 1459 1461 1463 1465 1467 1469 1471 1473 1475 1477 1479 1481 1483 1485 1487 1489 1491 1493 1495 1497 1499 1501 1503 1505 1507 1509 1511 1513 1515 1517 1519 1521 1523 1525 1527 1529 1531 1533 1535 1537 1539 1541 1543 1545 1547 1549 1551 1553 1555 1557 1559 1561 1563 1565 1567 1569 1571 1573 1575 1577 1579 1581 1583 1585 1587 1589 1591 1593 1595 1597 1599 1601 1603 1605 1607 1609 1611 1613 1615 1617 1619 1621 1623 1625 1627 1629 1631 1633 1635 1637 1639 1641 1643 1645 1647 1649 1651 1653 1655 1657 1659 1661 1663 1665 1667 1669 1671 1673 1675 1677 1679 1681 1683 1685 1687 1689 1691 1693 1695 1697 1699 1701 1703 1705 1707 1709 1711 1713 1715 1717 1719 1721 1723 1725 1727 1729 1731 1733 1735 1737 1739 1741 1743 1745 1747 1749 1751 1753 1755 1757 1759 1761 1763 1765 1767 1769 1771 1773 1775 1777 1779 1781 1783 1785 1787 1789 1791 1793 1795 1797 1799 1801 1803 1805 1807 1809 1811 1813 1815 1817 1819 1821 1823 1825 1827 1829 1831 1833 1835 1837 1839 1841 1843 1845 1847 1849 1851 185

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\* Series  $\sum_{n=1}^{\infty} \frac{1}{n^2}$  converges.

*B. P. 1000*

Ex. 1. Find around the same both sections.

Que se pague en debiendo a la casa.

Ich bin glücklich, die Besichtigung zu bekommen.  
 You still are turning me.

100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098

Small gold dynamo on motor base

\* about 1900 ft. - pounds

1944-1945

The Exp. to the above carbon, is also given

Fructs to the fine pithy, white,

Gold

[illegible]

*Bact. plexus* *chrys* *specimens* *large*

Mr. Hester.

Wednesday June 23.

Blanche Clark went to visit village  
Tavernous grounds near Philada.

Exp. with coffee in a little white bottle  
Ch. off ch. carbon connection. Green  
pipe broken in shallow earth.

canina from long ago. on  
the side of a skeleton was a small, thin  
shinier the skeleton the more like the  
conjugate action.

Half lamp, side, 67 stone and brick  
No 22 candle. (Thin) in a little  
hole. off sample like 5.13  
but found no sand. 6 per hour from life

hardening. Then person from  
to not find in which is a change.  
Yves length of jaw. one side of jaw  
in a line by head, brought to  
out of the jaw

21 157

Some part of jaw, perhaps in American  
Room. Blanche same shape of jaw  
Prachusa, one side of jaw. not enough for  
one lamp. to be changed to one 2500

Exp. same as by Dr. Wilson & some  
Dinnered again by Hain & Gristy

Victor, Puskas & Baly. have other fossils  
right side of jaw. a brown envelope

White Acid. esp. to make by 860 cm. in  
Some calcium carbonate. trans. to jaw  
provided with again. in a  
hole. comes in in the little, letters  
of White Acid. found

Thursday June 24

Anna Stacey in evening pulling up ferns.  
Back-plate lamp. Biting No. 39-218

X *Alouatta* Mr. Elmer L. S. to care of

X *Op. Short* kindly returning the paper

X *Op. Short* kindly returning the paper

X *Op. Short* kindly returning the paper

X *Op. Short* kindly returning the paper

Lamps. Small at 2-2 candle

Feet 3-4 1/2 in. - one at 1/2 in

From 2-2 candle 2-20 (small)

Like long plus 1-12 (small)

various in company

P.R. from among animals, 5 days

+ on ear

Maguelite Sebastian Herrera  
X *Alouatta* kindly returning the paper

Friday June 25

Hidden one and receipt for the animal

X a lot of paper of general purpose - stone

Go to Bradley cutting from American

X and palm leaf for experiments

Paper Scientific American July 3

X know only one description of *Op. Short*

white lamp, very similar to *Op. Short*

Test in low and high vacuum

Both lit. 117 to 173 paper can

X *Halteria americana* Mr. A. M. and land

again yesterday 340 fl. per

candle tooth 2-3 1/2 to 4 days

Saturday, June 26

From Murray place 10:15 a.m. in  
Camp yesterday 11:15 a.m.

Wilton (Coke) 2.00 per ton  
Kern 1.00 per ton

Test Camps. Both 11:20 p.m. 170

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

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Kern 1.00 per ton

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Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Monday, June 28

Camp yesterday 11:15 a.m.

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton

Wilton 4.00 per ton  
Kern 1.00 per ton



Wednesday June 30

Barb. Lamp 5.12 280 ohms

at 19 1/2 candle. a little blue

light 18 c. stayed about 10 minutes

2510 ft. from sea. average AUC. 9.05

ft. the pt. candle. Bar. 12.2 = 0.95 c.

20 lamp 5.12 later 5 M. at 15 c. 11.11

at 10 1/2 candle. 10 1/2 ft. the pt. candle

Small dynamo. 1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

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1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

1000 min. 20.11

Thursday July 1 80

Conductivity of glass at various temp.  
 1. 100. 6542. 11.542. 100. 100. 100.  
 2. 4 long Resist. 100. 100. 100. 100.  
 3. 100. 100. 100. 100. 100. 100.  
 4. 100. 100. 100. 100. 100. 100.  
 5. 2.07 for 100. 100.

See Messenger Mr. S. divides drawing  
 for more diagram of motor glass 4:  
 designed for 3 miles 20. Mr. Messenger

When pilot lamp will be used of glass  
 1. 100. 100. 100. 100. 100. 100.

Gas tanks at lamp factory started  
 1. 100. 100. 100. 100. 100. 100.

Electric Messenger 100. 100. 100. 100.  
 For expenditure list of tests as per

London house on the other day had  
 to be replaced and in the day  
 1. 100. 100. 100. 100. 100. 100.  
 2. 100. 100. 100. 100. 100. 100.  
 3. 100. 100. 100. 100. 100. 100.

Work all shut down on 8 to 10. 10. 10.  
 1. 100. 100. 100. 100. 100. 100.  
 2. 100. 100. 100. 100. 100. 100.  
 3. 100. 100. 100. 100. 100. 100.

Friday, July 2.  
 1. 100. 100. 100. 100. 100. 100.

1. 100. 100. 100. 100. 100. 100.  
 2. 100. 100. 100. 100. 100. 100.

Visit to Mrs. Little & Graham  
 1. 100. 100. 100. 100. 100. 100.

*Gambel's Quail* exp. to be made  
3/10/10.8 page 278: directed by C.

Temp. in lamp: attached and unt.

\* Made and some more some small

RR Station platform and car  
\*Carriage

Magnolia Spicata which grows to  
10 ft. high in the mountains.

Watt per solich to make P.O. Arani  
Capacity: 40 Camerata Brn. S.C. pgs. 200

Large Elc Locomotive, Armature  
plated on driving axle with slotted  
finger Railing

Saturday July 3.

Journal of Annals, cut and  
Xinu with Babbar metal

The brown Road Mass. contains gold  
\*first found by Wm. E. in Mass.

Temp. made with erected connection  
between rods & gauge tubes to permit  
if possible the use of mercury.

P.L. Station and removed to a field  
ready

Magasin de la Soc. Logon sur le 4<sup>e</sup> étage  
 1<sup>er</sup> in 2<sup>e</sup> in 3<sup>e</sup> in 4<sup>e</sup> in 5<sup>e</sup> in 6<sup>e</sup> in 7<sup>e</sup> in 8<sup>e</sup> in 9<sup>e</sup> in 10<sup>e</sup> in 11<sup>e</sup> in 12<sup>e</sup> in 13<sup>e</sup> in 14<sup>e</sup> in 15<sup>e</sup> in 16<sup>e</sup> in 17<sup>e</sup> in 18<sup>e</sup> in 19<sup>e</sup> in 20<sup>e</sup> in 21<sup>e</sup> in 22<sup>e</sup> in 23<sup>e</sup> in 24<sup>e</sup> in 25<sup>e</sup> in 26<sup>e</sup> in 27<sup>e</sup> in 28<sup>e</sup> in 29<sup>e</sup> in 30<sup>e</sup> in 31<sup>e</sup> in 32<sup>e</sup> in 33<sup>e</sup> in 34<sup>e</sup> in 35<sup>e</sup> in 36<sup>e</sup> in 37<sup>e</sup> in 38<sup>e</sup> in 39<sup>e</sup> in 40<sup>e</sup> in 41<sup>e</sup> in 42<sup>e</sup> in 43<sup>e</sup> in 44<sup>e</sup> in 45<sup>e</sup> in 46<sup>e</sup> in 47<sup>e</sup> in 48<sup>e</sup> in 49<sup>e</sup> in 50<sup>e</sup> in 51<sup>e</sup> in 52<sup>e</sup> in 53<sup>e</sup> in 54<sup>e</sup> in 55<sup>e</sup> in 56<sup>e</sup> in 57<sup>e</sup> in 58<sup>e</sup> in 59<sup>e</sup> in 60<sup>e</sup> in 61<sup>e</sup> in 62<sup>e</sup> in 63<sup>e</sup> in 64<sup>e</sup> in 65<sup>e</sup> in 66<sup>e</sup> in 67<sup>e</sup> in 68<sup>e</sup> in 69<sup>e</sup> in 70<sup>e</sup> in 71<sup>e</sup> in 72<sup>e</sup> in 73<sup>e</sup> in 74<sup>e</sup> in 75<sup>e</sup> in 76<sup>e</sup> in 77<sup>e</sup> in 78<sup>e</sup> in 79<sup>e</sup> in 80<sup>e</sup> in 81<sup>e</sup> in 82<sup>e</sup> in 83<sup>e</sup> in 84<sup>e</sup> in 85<sup>e</sup> in 86<sup>e</sup> in 87<sup>e</sup> in 88<sup>e</sup> in 89<sup>e</sup> in 90<sup>e</sup> in 91<sup>e</sup> in 92<sup>e</sup> in 93<sup>e</sup> in 94<sup>e</sup> in 95<sup>e</sup> in 96<sup>e</sup> in 97<sup>e</sup> in 98<sup>e</sup> in 99<sup>e</sup> in 100<sup>e</sup> in 101<sup>e</sup> in 102<sup>e</sup> in 103<sup>e</sup> in 104<sup>e</sup> in 105<sup>e</sup> in 106<sup>e</sup> in 107<sup>e</sup> in 108<sup>e</sup> in 109<sup>e</sup> in 110<sup>e</sup> in 111<sup>e</sup> 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216<sup>e</sup> in 217<sup>e</sup> in 218<sup>e</sup> in 219<sup>e</sup> in 220<sup>e</sup> in 221<sup>e</sup> in 222<sup>e</sup> in 223<sup>e</sup> in 224<sup>e</sup> in 225<sup>e</sup> in 226<sup>e</sup> in 227<sup>e</sup> in 228<sup>e</sup> in 229<sup>e</sup> in 230<sup>e</sup> in 231<sup>e</sup> in 232<sup>e</sup> in 233<sup>e</sup> in 234<sup>e</sup> in 235<sup>e</sup> in 236<sup>e</sup> in 237<sup>e</sup> in 238<sup>e</sup> in 239<sup>e</sup> in 240<sup>e</sup> in 241<sup>e</sup> in 242<sup>e</sup> in 243<sup>e</sup> in 244<sup>e</sup> in 245<sup>e</sup> in 246<sup>e</sup> in 247<sup>e</sup> in 248<sup>e</sup> in 249<sup>e</sup> in 250<sup>e</sup> in 251<sup>e</sup> in 252<sup>e</sup> in 253<sup>e</sup> in 254<sup>e</sup> in 255<sup>e</sup> in 256<sup>e</sup> in 257<sup>e</sup> in 258<sup>e</sup> in 259<sup>e</sup> in 260<sup>e</sup> in 261<sup>e</sup> in 262<sup>e</sup> in 263<sup>e</sup> in 264<sup>e</sup> in 265<sup>e</sup> in 266<sup>e</sup> in 267<sup>e</sup> in 268<sup>e</sup> in 269<sup>e</sup> in 270<sup>e</sup> in 271<sup>e</sup> in 272<sup>e</sup> in 273<sup>e</sup> in 274<sup>e</sup> in 275<sup>e</sup> in 276<sup>e</sup> in 277<sup>e</sup> in 278<sup>e</sup> in 279<sup>e</sup> in 280<sup>e</sup> in 281<sup>e</sup> in 282<sup>e</sup> in 283<sup>e</sup> in 284<sup>e</sup> in 285<sup>e</sup> in 286<sup>e</sup> in 287<sup>e</sup> in 288<sup>e</sup> in 289<sup>e</sup> in 290<sup>e</sup> in 291<sup>e</sup> in 292<sup>e</sup> in 293<sup>e</sup> in 294<sup>e</sup> in 295<sup>e</sup> in 296<sup>e</sup> in 297<sup>e</sup> in 298<sup>e</sup> in 299<sup>e</sup> in 300<sup>e</sup> in 301<sup>e</sup> in 302<sup>e</sup> in 303<sup>e</sup> in 304<sup>e</sup> in 305<sup>e</sup> in 306<sup>e</sup> in 307<sup>e</sup> in 308<sup>e</sup> in 309<sup>e</sup> in 310<sup>e</sup> in 311<sup>e</sup> in 312<sup>e</sup> in 313<sup>e</sup> in 314<sup>e</sup> in 315<sup>e</sup> in 316<sup>e</sup> in 317<sup>e</sup> in 318<sup>e</sup> in 319<sup>e</sup> in 320<sup>e</sup> in 321<sup>e</sup> in 322<sup>e</sup> in 323<sup>e</sup> in 324<sup>e</sup> in 325<sup>e</sup> in 326<sup>e</sup> in 327<sup>e</sup> in 328<sup>e</sup> in 329<sup>e</sup> in 330<sup>e</sup> in 331<sup>e</sup> in 332<sup>e</sup> in 333<sup>e</sup> in 334<sup>e</sup> in 335<sup>e</sup> in 336<sup>e</sup> in 337<sup>e</sup> in 338<sup>e</sup> in 339<sup>e</sup> in 340<sup>e</sup> in 341<sup>e</sup> in 342<sup>e</sup> in 343<sup>e</sup> in 344<sup>e</sup> in 345<sup>e</sup> in 346<sup>e</sup> in 347<sup>e</sup> in 348<sup>e</sup> in 349<sup>e</sup> in 350<sup>e</sup> in 351<sup>e</sup> in 352<sup>e</sup> in 353<sup>e</sup> in 354<sup>e</sup> in 355<sup>e</sup> in 356<sup>e</sup> in 357<sup>e</sup> in 358<sup>e</sup> in 359<sup>e</sup> in 360<sup>e</sup> in 361<sup>e</sup> in 362<sup>e</sup> in 363<sup>e</sup> in 364<sup>e</sup> in 365<sup>e</sup> in 366<sup>e</sup> in 367<sup>e</sup> in 368<sup>e</sup> in 369<sup>e</sup> in 370<sup>e</sup> in 371<sup>e</sup> in 372<sup>e</sup> in 373<sup>e</sup> in 374<sup>e</sup> in 375<sup>e</sup> in 376<sup>e</sup> in 377<sup>e</sup> in 378<sup>e</sup> in 379<sup>e</sup> in 380<sup>e</sup>

Letter for sale of the manuscript  
being made by Andrew J. Ward



Platinum helioid in alcohol.  
- pyrometrum salt & Platinum  
Carbonia one disposed east  
solutions and acarbonic acid.

Pullman bar, in track

Wednesday July 7  
Bake, application to and Elec  
lighting of Cranway Rail Road  
Sketches made by Mr. Carson  
and given to Hill, on Tuesday  
Carbonia made. Fiber cutting  
Tools, sketch for a drawing  
• Carbonic oxide system live on  
by conducting current to lead to  
new room where one for track  
with clutch motor, both sketches  
by Mr. Carson during my absence  
Also in room 105 page 5. List of

Application of motor & power to  
be made.

Now commenced digging for founda-  
tion of a steel engine, adjoining boiler  
room.

Left Carson's house on Monday, 7th  
week

Two Amalgams were slightly exposed  
yesterday by a fire.

July 7  
Larger former for a carbonia  
Keeps by John. All plates shown  
John cut and carbon cut out, and  
live bricks being shown for boiler  
room, probably to show him for  
new design. In carbon coal ducts  
John Benson and one Smith  
of whom Barst at drawing bench

Pump lamp sealed on and air  
vacuum sealed off between gauge  
and drop tubes. Light to burn to  
note whether balance could be de-  
livered by fall of mercury in gauge tube.

Working drawings of applications  
of milk and emulsion on page  
2 Benth No. 105 commencing today

Sullivan Car raised for pulling on the  
Magneto for trials which is being  
repaired for by Smith.

1. Water repaired a 5 machine  
 2. Water in multiple on 16.2  
 3. Water 120 with overboard and  
 4. Water  
 5. Water with Water attached  
 6. Water off Water

Thursday July 8.

Lamp & Sparker Station - Box 68 pgs.  
145. One said off lamp & sparker  
station 1200. One corner corner with  
sparker lamp in sparker cabinet, corner  
in sparker station in diode for vacuum  
tube 1011 pgs 10

Feels plate lightened and one removed from  
each side near top of bill.

6<sup>th</sup> Bad. Comp. in camp when it was  
tested 8 pm H.P. 16 candles burned  
at 44° N. line - 20 minutes 200%  
2<sup>nd</sup> camp line at N.E. low e current on 14780  
Oct 24/94/10.

Sparky, 206. Platinum wire in place of  
Vincennes

Conducting poles. Two large ones at base of  
No. 1, on ground & one, but cap

Shall Maguire found six layers of

stratification picked poles leading to S. fact.

Spokane Mr. Shahan and Mr. L.  
write thru California friends

Joe J. Cunningham & Co. are cutting  
in the pipes at Lamp Factory

Friday July 9

Robert Leventhal American calculator

description of Edison's invention from

apparatus also by Besenberger's

darkness of time from Shahan Eng. 100

A.P. 76 Same C.H.P. Mr. J. Lehmann

calculator eng. 2 H.P. 26.5 - C.H.P. Eng. 2

26.4

Some gear set running on the

lathe to create regular dimensions

One running 6000 rpm. built by engine room

Long battery 275 ohms. also Bore 104.0

74.74 time 1st - 6.9 sec. from 16.2

Wood Miller Dean running the fine  
spec cutting spindle from one  
constant shaft to polish the  
bearings

Albert W. M. Edison went to N.Y. 11:22

Left early evening

Maguire back, hoping it's practically  
done. Bore car.

Captain Taloon, whose like when it

period mile. recorded Mr. Shahan of

apparatus on motor principle

Bore No 108 kg 14.2



Monday, July 12

Visited Mr. Miller.

London put at sea & the air clamp.  
The engine, 14.15.16.

Interference. The engine. Machine on  
the side of the engine. Engine being 16.15.16.

Signature on the bottom of the  
X-ray machine. The engine, 14.15.16.

These are the same. The engine, 14.15.16.  
The engine, 14.15.16. The engine, 14.15.16.  
The engine, 14.15.16. The engine, 14.15.16.

On the camp. The engine, 14.15.16.  
The engine, 14.15.16. The engine, 14.15.16.

Circuit changes. The engine, 14.15.16.  
The engine, 14.15.16. The engine, 14.15.16.

On the camp. The engine, 14.15.16.  
The engine, 14.15.16. The engine, 14.15.16.

Tuesday July 18.

Spent time on heading plants in  
Honey slopes to test and experiment  
on carbon deposits.

Rud. Mr. Vpton.

Current changes since this morning  
for Emerson, located in Pitts River.  
Wade lamp shown and not working  
for life.

Wade lamp shown again. Tuna with  
green palm leaf fan on leaves.

Wade lamp shown again. Tuna with  
green palm leaf fan on leaves.

Wade lamp shown again. Tuna with  
green palm leaf fan on leaves.

Wade lamp shown again. Tuna with  
green palm leaf fan on leaves.

Wood Miller, Dean put blocks in  
Honey slopes, found it to work nicely for  
fish trial.

Local dust-brush. Mason common  
laying the walls for furnace & platform.

Carbon to be treated with  
sufficient solution and time  
to 10.5-pg. 21 ke.

Barbaro lamp carbon split  
separating it into four distinct  
files, never before observed in  
a lamp.

Bosch Edison 6 Machine	102V
Basin Milet Egg	103V
Little Winton Bass Lamp	103V
Winton, Range of lamps & Diagrams	59c
Carlson Lamp 6	105V
Francis	104V
Original sketches of machine for Edison	
Little glass for lamps - Bick 50 pages	97c
Wagonette - Sprague Bros 30, 32, 33, 34	
Hearing	101V
Edison	108V

On was taken and a sample  
of Potassium Cyanide  
in water added to the  
thin plates, through which  
and the copper plates  
the two poles of  
the battery, a series  
of silver plates was  
the plates.

56 candles 5.4 minutes  
power 800 candles  
hours power 2 1/2 hours  
2.5 ft. the per candle 2.5  
ft. for 9 candles - 2.5  
Candles 2.5 ft. for 9 candles  
2.5 ft. 183



**Mott Journal #4 [PN-80-07-14]**

This is the fourth of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period July-September 1880. The front cover is labeled "153" and is inscribed "C. P. Mott No. 4 May 14. 80 to Sepr. 23. 80." The pages are unnumbered. Approximately 70 pages have been used.

E 32 6

1992

Platte 100 - 93

Page 450. *Quercus* sub

Showering, taking up all suitable letters

Now on hand in store, since May

Wrote Mr. Davis & Mrs. Davis

Wilcox, 1880

\* to share the results of the study

Learning to read, by the same author.

3. *Ther...*

*Calamagrostis Sabinae* Torr.

Made by Mr. Uptin Book No. 103

for [unclear] [unclear] [unclear]

renewal common in the last lamp-brood.

in 986. Another man on September 10,

1. 10-41 M. at 44.5-45.0

Carbonization some fast carbonous sub.

1. *Plumieria* with direction of growth

*Amorpha* & *Platanus* & *resulpinges*, Lam.

1225-1270 - [illegible] [illegible]

Travel. and. likely; D. 1850. 1851.

*The Camp & Lake Journal* Bern. No. 27 pp. 23  
N.Y. 87-100 1896.

FD-302 (Rev. 11-27-70)

Then Bradley getting out some Bamboo  
with ends in x. etc. very difficult to get  
out in frames in or in use.

Photographs of shafts of Dollar Jacks.  
mine picked and discussing means  
of applying electric motors to pumps  
for use in deep mines. That mine now  
working nearly 3000 feet below surface.

### Thursday July 15

On separation glass shot with two papers  
pieces of tubing across made for S. Mac  
to continue experiments on re-separation.

Returned Mr. Clarke from vacation since  
July 2.

R.R. grade true at noon by some  
of the boys. broke chain bottle and  
kings jumped off except the others  
he got hurt some and was back  
but they will start up.

Loops, Mr. Ratchler painting pieces of  
Bamboo loops before casting them.

Income from Bank's share. Page 21. Sketched  
and dimensions. Book No 102 page 21. Andrew  
making the form.

Visited Mrs. Palmer & Mr. Painter Washington D.C.

Conductors to Street lamps are down but  
not all covered. commenced May 1st 90.

Lawrence has apparatus for work at  
Kamp Factory, measure from Kabinay &  
put in " " East week day day.

### Friday July 16

Mr. Clarke gone to Trinidad.

Kamp Factory having pump for  
well received this AM.

Installing track, commenced building  
Tania felt under R.R. rails to mudate.

Conductors tested by Mr. Wpton Broth  
 103 page 145 18 wire circuit wire to wire  
 35 ohms Ground 25.4.43. Gamma  
 Wire to wire 1.4 ground 11.2.48.2  
 Gamma circuit " " 61.8 " 25.6.52.5  
 Gamma line " " 1.6 " 5.8.4.9.4

Walter Miller Dean got machine setting  
 the loops beautifully, and I observed  
 years on the saw for saving them off  
 Mr. Edison instructed him to lay in to  
 on wire and prepare for marking the  
 extending clamp machine. Jim & Conn

Visited A. Gage part of Sunday got to  
 also one of the conductors there were  
 and a man with railroad medal from

Carbonization: Mr. Dathus Johnson  
 for recarbonization some carbon by  
 dipping wire in nit. syph and electric  
 solution of syph

Saturday July 17.

Alvina came forward of wire but  
 proved to give 33 ohms resistance  
 finished by Torco.

Alvina, Brady & Cameron read from  
 go representing full knowledge of the E.E.  
 Mining processes and applying for  
 mines to work

Camp 1277. Noted a Barbed wire clamp  
 wire about 5 minutes at probably 40 sand

Visited Carson, also Jim of Herald  
 X. Also spoke with by D. Miller to aluminum  
 conductors. Miller oh wire on wire all  
 day but 20 wire circuit test a short  
 afternoon no improve want

Worked on at Men at <sup>recess</sup> ~~clay~~ <sup>clay</sup> ~~clay~~ and  
 on blower at Camp 1277. Finished 12  
 Paving of conductors, Dean's wire mill  
 finished and put away, gas about finished  
 but a interesting time at carbon  
 Pileam & Walter Johnson & Walter

Monday July 19

Prima Girards. Monday cut with some  
gravel at 300 ft. receding, gravel.

Cashin Valon, had with running machine  
motor and two short iron bars. Also  
29 ft. 2 in. of lead from the mine to 9  
inches. Current meter not encouraging.  
Boiler at 8:30 AM July 19.

Mining. Shakes of some separating  
gravel to 1/2 inch and 1/4 inch, 100 ft.  
No 107, 29 ft. 29 ft. 29 ft. 29 ft. 29 ft.  
29 ft. 29 ft. 29 ft. 29 ft. 29 ft.

Blanco. One given Blasting from which  
to cut some. Copper, Heat, pressure  
and bar. Calcutta. 29 ft. 29 ft.

Tan tested power a good iron  
conductor. Boil No 107, 29 ft. 29 ft.

Visitas a gentleman connected with  
Metropolitan Mining and R.R. of  
London. Mr. L. L. L. of London.

July 19

Magnetic Separation commenced  
some on frame for practice working the  
system of Magnetic Separation.

High power Engine. has not been running  
after his return since Tuesday last.

Rail. Installation some ideas given by Mr. E.  
and later on divided to sheets there.  
Any suggestions of his now for trial on  
the electric road.

Barometer. Port 100 ft. 135 ft. 7 ft. 2  
102.65 ft. 11 ft. 8 ft. 102.25 ft. 98 ft. 102.25 ft.  
114 ft. 100.6 ft. 175 ft. 99.15 ft. 114 ft. 89.4 ft.  
13 ft. 25 ft. 11 ft. 11 ft. 11 ft.

Tuesday July 20-1880

Track test, RPH 137, age 77. Pelvic tracks.  
\* - Shmies, disconnected at end of inse-  
lata rails, far side 112 mm. Paper 12.4.2.

\* *L. thms.*, disconnected at end of incu-  
lating rails, Jan side 112 omm. paper 124, 2

Clamp Machine. description of Imp.  
\*ms Model by Mr. Baldwin Bells 107p 23

Clamp Machine. description of Imp.  
No Model by Mr. Baldwin B. 102p. 23

on model by Mr. Balch in 1810 10/2/23

Yam fasting six weeks casting floor man  
Shencing pump. Donghai pump  
preparia for well and mine.

Mercury pump. Doulton pump  
Preparations for well and pit in.

Preparanda for Brill and Berlin.

Small Engine, taken apart and repaired  
for shipment, from Lamb Factory

Per Shipment, from Camp Factory

Fiber prepared, learn making ties, one for  
each side on edge of fiber. It is secured on  
back so that it may not turn under for  
pleasing the material, then save one of ties

back side on edge of plate. It is secured on

Knock so often may use two hands for

placing the material, saw saw me & I saw

Water Engine run at Norw. to dump water  
into Tra and then 2nd cleaning at rock

Miss. Pina and Men 2<sup>nd</sup> cleaning st. orch.

Gas Carbonizing furnace, received and  
ready for gas retschments.

Ready for gas attachments.

Wistlas, Godana & Lowry with friends.

On visiting Mr. Edison sketched designs for washing rice and gave to Mr. Fane to make the apparatuses to experiment.

series for washing rice and gave 159 ml.

Force to make the apparatus to experiment.

Wednesday July 21.

Paper Loop tested. at 44 candles lasted

18. M. showing an unfavorable comparison with Bash in Bambo. 15. 11.5 juv. A.P.  
15066 9/10/83/Jan 21992

Mon with Bath on Bambra - 13<sup>th</sup> 11.5 pm A.P.  
Bath 7/10/03 Dec 2/1942

100-442191-2

Ele Eng. Blanche class in investigation and  
study of perfect design of airplane structure  
locomotion. And also in rail innovation  
Proto. No. 15, 1911.

study of proper design of prototype of a

Locomotive. And also on rail road.

Bento No. 115, esp. 17c.

Year. Nov. 1840 commenced putting new  
gears on the locomotive

Year on the locomotive

Abund. Mr. Salchman went to N.Y. 11-20-65  
see family off to Europe

see family off to Europe

Ownership of Bahr & Bahr Co. far tested.  
Adm. adz. each firm to M. Carter 17 mo.  
Barto No 112 - page 74.

Adm. and each form to be made 12 m

Book No 112 - page 74.

Blum's test for lamps exhausted and  
extra 91

Revised current for lamp test at 100  
Volts current 11 min, Best. Rev. 100  
20 Minutes Best. Rev. 257.

Maguire call, Reiman - worked through 10.00  
John Blake through 12.00.

Carbon test, Mr. E. H. M. suggests bending the  
lamps to detect soft spots & shorter and  
attachment for a Reiman Probe, in 100  
Volts may be tested and defects noted.  
Bad ones rejected, without exp. of 100 Volts  
in lamps, 30 carbons tested at a time.  
Best. Rev. 12.00, 257.

Thursday July 22

Dynamometer open car 16 Volts start  
top case 100 and top 64 to 100 to 100  
North moving. 40" were running on  
current - to more engine, 86 to 100  
starting 64 to

July 22

Japanen Barbra test lamps tested at  
400 candles - 15 + 20 minutes Best 100  
page, 262. Summary of tests Best 12 page 9

Organizing some tests of extra work, Extra  
Record <sup>General</sup> test by Reiman, inside former  
on ammeter came out very nicely.

Gas Man, setting arm and clutch  
gear on electric motor.

Spoke, between rails. 11.8 Amm. 13 Volts  
30 Volts no appreciable difference.

Water heavy rain last night and  
No day stop a car from work at the  
pond for the present.

Extra power completed by Reim, adding  
a frame to hinge to support on extra  
and press it evenly in the former.

Friday, July 23

Papers. Rev. J. W. H. H. publishes this morning a long descriptive article on the Electric Rail Road and its adaptability to elevated roads.

Rail Installation rails tested this A.M. 8:30 AM. Two rails laid down near Laboratory for experimenting on track installation.

Daily Graphic. Anti-Locking Photos of Electric cars.

Small Eng. from Gen. Factory. Shipped to Harrison Mich.

Bentley Crase. 18 candles. burned 68 hrs. in this lamp. As appears after running a few minutes, did not get into form. When about 50 minutes back in.

R. D. Dingus several devices for feeding a current to maintain electric motor, also several for placing ends of cables. Also Pat. Office. Arranged to have new set made. X. Present for head. Machine making rolls.

Saturday July 24

Papers. Enad. to day has also written article on the Edison electric locomotive.

My. J. Phoenix. Exam. for Pat. Rights.

Back film two bundles from Baltimore used.

Lamp lens. Jackson commenced working with the third material.

Film former, frame not stiff enough to stand the necessary pressure. Dean commenced making model for a frame & different side bars.

Carbureting former. Andium making with glass. sent. Dico to be drawn on ship along in shipping.

Work general. Men purchasing gas. sent. J. A. in designing general portions for drawings on lamp & clutch mechanism. Friction, etc. on electric locomotive.



Monday July 26.

Barbours, exp. in Parsons, rd. Chelonia  
Loop, India off at camp, Barbours, but  
in, and after heating for some time  
bottle in glass, colors embossed  
inward then to go on a little to bath  
glass, Barbours, latitudes, pair in lamp at  
16 c. 12.83 line 14 km. This Moon, but  
at 360 candles, 7.2 ohms, lasted  
13 min. 50 ft. the low candle, 700  
candles per ft. 2 pieces of platinum wire  
galvanic, in the manner with fine filament  
of carbon, and 20 pairs from 10 per. with  
acidic H<sub>2</sub> solution, back in oil the heating  
48 c. 8.65 ohms, 883 volts 575 per ft.  
Bottle 137 page 53 c.

Quest for Lemniscate the. *Le. lemniscata*  
*Le. lemniscata* found on dark, sticky, rich,  
 when earth dried by black. B. 1850, 1851, 1852  
 Black, ripe, smooth to Dr. 1850, 1851, 1852  
 from for leading to furnace

Plash Separated up at corner of  
Small Engine house,

Victor Leland and Rec. & Ind. Co. the  
R.R. rights. - First as & Second, better

Plastic for former sliding center line  
center out. twice.

Yamp. will shoot over calm on clamps.  
You passed through gl. calm view  
sufficiently near to arc to look.

Abraham Samuel Edison Sept 7<sup>th</sup> 1876  
Port Clinton

Rock Drills, including Mr. Sullivan  
the various types of hand devices  
for electric rock drills, showing  
connections with dynamo, etc.  
List of items needed by camps in  
various ways of Application Book  
No. 59

Tuesday, July 27.

Visitat Prof. Barlow & familia nov. 1885.  
 Per car. domus, 12. a. 1885. Per  
 car. Barlow & familia.

Lamp with burner attached & used  
with intention to try to burn up  
the carbon with carbon paper from  
carbon the other.

Black mulberry. Lined. A. S. & Co. N. York  
any price to the maker.

Hydrogenation, with powdered coal at 7  
atmospheres in Monrad, to leave white  
fine Hydrocarbon in union with the  
vegetable carbon, similarly, to the  
union, in hexane, of these with  
sliding, solids, with first stage 1

Spelunking test, made by Upton  
on the Back region of R 1512 pgs. 53 & 4

East of Bark Land, sailing from New Bern  
120 1/2 miles, 1 1/2 in. from shore, 1/2 in. from shore,  
last 67 in. North 112 1/2 mi. 5 1/2 mi.

Calam, deep flooded in Russia in the  
months, came out good. did not appear  
to have absorbed much nitrogenous  
food in 202 days. I broke the antlers  
to naked eye, but under microscope  
observed some small tubules of 100, one  
in Paraphine, could not see light

Wednesday, July 28.

Carbonization Mr. Balch is continuing  
exp. with Kerosene products, in carbon  
moulds. B. 105 page 124. using kerosene  
isobutane and naphthalene

Garage factory, Schomberg, putting  
in corn necks blower & heater, hammer  
putting taking one pump & connecting  
with Wisconsin pipes.

First separation, Mark lived the relating  
1st separation, satisfactory enough to  
have no further breaks with poor applica-  
tion to life.

Motor at Lamp factory <sup>closed</sup> closed, limited  
gave me test of power

P.R. The dynamo currents applied to  
Kailash, may amount upon less  
than an Ampere.

Telephone, News and Communication  
Signed between Office of Attorney General  
and  
News,

Roller duich, details finished by Mr. Glauco  
Blind's London telephone Mar. 1892

Thursday July 29.  
Ride, in Laboratory for connection by  
train to Clinton 20 mi. now 8<sup>30</sup> P.M.

Roller stand. John A. making more  
to test the efficiency of Chamberlain  
stand. Miss L. and Miss G. class.

*Dynamis* *Shai* one of the same group  
*Xuan* *remov* *color* = *black* *red* *white*  
*a* *fruit* *Dynamis* *shai* up

Edling Carbone M.E. gave Nelson the money  
which to make application for Indian Certificate in  
Williams.

[illegible]

Friday July 30  
Papers. Heard to day, has very  
favorable reports from London  
concerning the behavior of the  
light on St. James Colombia

Carbonization. Some carbons made with  
Klaire gas passing through mounds.  
Come out beautifully silver gray.

Magnite calor. test of Bergmann + W. G. R. 186  
557 page 24-25.

Quicklime burner. Main test at 1000 and  
furnace appears completely.

Blue insulation. Boys smoking started from  
from the burner & tar, becoming steadily  
from 25 to 26.

Drainpipes. Run from small engine  
pressure to and connect to 15. Main drain  
pipes running through laboratory.

Vacuum vapor lamp. Last test attached  
in which was put kerosene oil, and  
after vacuum was tested 17 1/2 hours.  
72.5 Watts 1300 ft. lit at 16 candles  
very successful. R. 186 page 89.

High power, added gas to run again  
all night.

Hydrocarbon long globe made and  
in blow & rubber pipes sealed in.

for passage of gas. Rubber stopper fitted  
on tube for wires and to one end of globe,  
gas lit at outlet and current sent  
in circuit in globe, greatly augmented  
by the hydrocarbon.

Hydrocarbon, for test of gas, running for  
current for pumps.

Visiting Driller & Patent of Venial  
X for alarm indicators. Bond.

Saturday July 31

Mercury, about 150 lbs. 12 jan. read  
at 24 in. Easting for vacuum, over 100.

Rails installed in laboratory yard with  
rubber cloth and iron washers under  
spikes.

Exp. Carbonized furnace set up in  
Chemical laboratory.

Gasoline Vapor 6'3' Carbon Lamp 9 inches  
Flash light, 160 candles 90.4 others 88.2  
vols. 8.6 per Amp. Book No 112 page 99.

Wires found in one. Edison & Westinghouse machine  
boxes & electrical boxes contain sink carbon  
and hydrocarbon. And also many  
carbon forms, different from the  
sink carbon material. One black one  
yellow, translucent, yellow surface and  
translucent. With the same size  
showing specific nature, burning, glowing  
budding glass rods, or even from  
budding glass, sink carbon, & even  
making glass tubes in casting. Some  
other piece for glass. However at Lamp  
Factory, Cleveland going wrapping &  
starting 25 wire around lamp  
at work on large magnesia separator.

Abert. Mrs. Bateman. Edison. Light  
Keast on 3<sup>rd</sup> -

Monday August 2.

After testing, draw reaction table, folding microscope  
with 2 1/2 glass on 1 in bottom of base and  
Gauge, 0.12. Venturi in opening of base so by  
passing the glass along the film, any reaction  
on the film may be observed by the magnifying  
glass, described by Bealston Book No 106, page 35.

Wrote at Camp 1st Reg. Min. at Fort. May

Caroline Barton, Maria Susan, High - last  
Apr. in 172. at 72 c. Lasta only. 4 Min.

Calomelic tis - Made of a Lamp, apthimbo  
(X) also in local tea and again tested  
in Calomelic. Same result.

Pump in use about 4 weeks cracked when the drop stone became cement.

Lamp 6 in filter Bamboo Burma  $\frac{1}{2}$  24 in  
 Nearly 7 per hp, 71 candles

Thursday Aug 3.

Revised Horace's story, and sketch  
and comments of this Edition of  
X Captive Falcon Experiment and some  
write article on Acute Mangelin.

Engineer Hord left this A.M. and Mary  
has been engineer to day.

Gas furnace, not enough air blast  
from Hoven, gas from Kettle with  
bellows set up and furnace heated.

Museum, flasks now brought up to Mich  
about 1/2 in the room. Stopped started.

Research. St. Maria has been engaged in  
quartz, a work in searching for all quartz  
in sufficient quantity with the electric light  
carbon, vacuum, &c. &c.

P.D. drawings, carbon furnace, double, and  
X lamp, lamp with straight carbon, on  
write two straight carb clamped at top  
appar for carbonizing in paper, room carbon

2 carbon loops at right angles, edges  
held in rows of same later, wires through  
main ends sealed glass.

Wednesday Aug 4.

Heavy browned gel, sample very dirty,  
Hardeners still at work on it.

Double Kiefer, brought making a  
possible Kiefer for solution samples. &  
Hardeners making another for gas furnace  
or instrument for making down.

Carbon from gas furnace, sample tested  
102.178.1 ohms - 418.1616 ohms  
found accidentally 102.112 ohms. 20.5 ohms  
found, run through furnace with 2 pressure  
5 good carbon gotten out in new night  
along.

X Carbon straightening, carbon starts, straighten

Thursday Aug 5.

Paper. Arata to day describes. Stephen.

Friday. Fuchs electric engine, Patent issued.

July 13. Application filed June 9. Patent claim.

It has been filed over 1 year ago.

Museum pumps at Lamp Factory, some water.

pipes at some joints leaked badly. Both.

Went to see the Lamp Factory Museum.

in.

Went to work on diving. White metal.

off on rails. Both 155 page 65 & 66. done.

Aug 3. Arata to day.

Museum. cardboard boxes, lamp.

for electric heat went from 8 to 11 candles.

Both No. 112 page 213. in case of.

11. Arata page 150. done.

Friday Aug 6.

C. De Arata. Sketch of a new o pump.

1500. 1500. 1500. 1500. 1500. 1500. 1500. 1500.

Notes on learning rope and the support of same.

Both No. 108 page 53 & 54.

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Saturday Aug. 7

Byondin, the American Magnet  
taken out and returned.

Visual Indicator, brought (another)  
byrd set up by McIlwain

Micrograph receiver tried, worked and  
some noise & distortion to be re-  
modelled.

Work general of test. I am drawing  
coal dust from ten cans of same  
laying on switch. All removing  
and putting screw glass in the  
specimen. I am on "Clamp, pressure, &  
thrusts for dressing panthes. Mrs.  
Bachman on carbonizing and  
apparatus for getting them fine.  
Mr. Walter has most of the work  
getting up specifications. Mrs. Lebowitz  
Lansbury, with oral discussion  
for each day.

Sunday 8 Aug.

After lunch and thoroughly clean &  
by Mrs. Lebowitz. I have taken up  
the also here, will arrange for book  
coal sup. before firing up again.

Carbonizing. Mr. Bachman describes the  
apparatus and explains details of carbon-  
izing to discuss cause and remedy of the  
cleaning over of the logs. Both the

Monday Aug. 9.

Top section & test. Mr. Lebowitz  
cleaning up latches & boiler now.  
After at work improving the road work  
firmware for trial.

Carbonizing. All carbonizing done  
found at Laboratory & Ranch & West  
putting up table & pressure at San Jose.

Locomotive Logan at work. Putting  
gear on the locomotive.

Stationary. Mr. Eng. Hering. Making drawings  
of the engine, same action as the first  
one. Hering to have them.



Tuesday Aug. 10.

Several letters rec'd from Bergmann.  
 X-resolution to test the applicability of  
 and metal indicators. but the use

X-as dust. Furnace light in standing

Gas air va. but in gas tank and on  
 X-ward on machine as soon as  
 power can be obtained

Paper on line. Loop after burning some time  
 was increased under pressure

Wednesday Aug. 11

Letters rec'd from L. & L. & L.  
 X-as dust. Furnace light in standing

Engine. Heavy steam from fire  
 only in back burner

Work. Latest work partly to show  
 X-as dust. day & night as long  
 as men can stand it.

Blair. Port-Horn station at  
 Lamp factory die in a hot  
 iron casting. At the last shot

Notes Report of James Abent  
 in the last 24 hours on day

X-as Lamp. Notes of preliminary work and  
 preparation to be made to start work  
 in the day of week. At 11:45 a.m.

Thursday Aug. 12

Captain. Heard 15 day. Has some work  
 X-as dust. Furnace light in standing  
 of the machine outside last night

Engine. Pump. Some perhaps lost  
 X-as dust. day & night as long  
 as men can stand it.

Work. Latest work partly to show  
 X-as dust. day & night as long  
 as men can stand it.

Telephon case. Diagram made. The alter-  
gation suggested here some days ago, in  
the case and complete telephone. sent  
here and lately by Mr. Nipton, under O.K.

About Mr. E. in N.S. day. Most in  
Oliver Smith, all day.

Leave for Mr. Making working models  
for case for Port. Indicator, Mr. Latham  
Nipton. Indicator case. All case day. Also  
David.

Working on Mr. Bostwick's experiment  
dia. and also the problem in connection  
coming of the looks to day. After  
a thorough discussion to night, it was  
suggested to be done to the on side. Main  
position of bands being from ground  
towards the inner side. Bands were on  
line, and to get the thing done.  
were taken to be arranged to hold the  
carbon as near the path as possible.  
Some on inside on outside of case. O.K.  
Book No 135-842

Friday Aug 13

Walter Anderson, changing all the  
figures to add the case up for  
case making.

Walter, Mr. E. and Mr. Latham. Under discussion and  
case, and also of the case of Nipton  
Book No 132 p. 1.

Walter. Mr. E. and Mr. Latham. Under discussion and  
case, and also of the case of Nipton  
Book No 136 p. 192.

Saturday Aug 14

Walter, Mr. E. and Mr. Latham. Under discussion and  
case, and also of the case of Nipton  
Application for foreign countries.

Diagram sent to Woodbridge to  
get the gas pressure work  
note in the instead of side of line  
and bands to be, last around, May  
expect the work to be done in 10 or 11 days.  
See Appendix "Narrow road"

Had some Mr. Salomon making  
 experiments to determine cause and  
 effect of smoke to prevent being eaten  
 from burning very thin sections of  
 of the locomotive. Doing the  
 experiments with coal dust & powder  
 in the testing the blowers and gas  
 supply at the factory later in  
 the morning. Conducted with Mr.  
 Loring and Mr. Salomon. Mr. Salomon  
 from several days to the factory

Monday Aug 15

Mr. & Mrs. Salomon - made of a  
 X-ray machine with various light on. Mr. Salomon  
 table for Carat drawings to the main

Monday Aug 16

Factory, Bladly Det. the in light. Loge  
 that work cutting bamboo to.

Coal dust, still running on dust coal  
 in the experiments in burning & testing

Found in vacuum, Mr. Salomon had some  
 and made in separate vessels to be tested

Coal dust, still running on dust coal  
 X-ray machine for burning coal & dust will  
 be disposed with for present.

Mr. Salomon finished splitting for bamboo  
 in which the knife is secured as a handle  
 of slide on carriage to be held down by  
 a screw and moved by spring in a single  
 bamboo over a screw between two blocks  
 held together by two stiff springs

Tuesday Aug 17

No 1360 experiment at 1000 lbs. in test  
 carbon burned and after burning, one was  
 very, when in a test with glass  
 burning a block of wood about  
 half hour before burning carbon

One trial a sawmill. Some had  
 machine made a gas generator small  
 from the bottom of a test in which the  
 from the carbon in which is a test in which

1000 lbs. in test

Madison. First examination in Saint Louis  
Yacht by Van Clute & Co. north of 12  
Marsden & Wm. H. H. H.

Small tests, such as. Number of Lamp  
from same source were same. but  
at 32 candles in 100. 100. 100. 100.  
free of spots. Lamp. Number of tests  
Norm of the Lamp. Number of tests  
and were taken for vacuum, and a few  
tests in those with which the material glass  
entire when the glass is 100. 100. 100.  
in from the same.

Bamboo Exp. Mr. Balthus placed two holes  
in bamboo. 100. 100. 100. 100.  
in carbon plate under which two  
gas jets were turned.

Visitors For of Lizard now in 100.

Wednesday Aug 18  
Revised, two boxes glass from 100.  
100. 100. 100. 100. 100. 100.  
Lamp. and early 100. 100. 100. 100.  
Carbon fragments 100. 100.

Robert. Edison & Lizard 100. 100. 100. 100.

Bamboo case not to straightened  
100. 100. 100. 100. 100. 100.  
two streams of hot steam.

Revised, Mr. & Lizard, 100. 100. 100. 100.  
100. 100. 100. 100. 100. 100.  
100. 100. 100. 100. 100. 100.

Visitors. Lizard, 100. 100. 100. 100.  
100. 100. 100. 100. 100. 100.

Carbon, Serial cut 8x16. 100. 100.  
100. 100. 100. 100. 100. 100.

Thursday Aug 19. 80

Wires drawn, then 1 wire  
Spec. Taper. Machine. 1 wire in  
at work by Helges in Factory

Armature, having the very light  
marks of supplying the wire line  
Specimen this morning. No external  
examination could reveal the position

The Bull no. 10172. started by Baethers  
Kono made by J. J. Helges some of them  
tube for bonding tape and so on being

Test lamp with carbon 84 16 10.66 c.  
Resist 210 Ohms 5.4 per cent. at 32 c.  
188 Ohms Resist 5.4 per cent. at 32 c.

Friday Aug 20.

Armature, single armature  
Turned out in same machine  
as the one of yesterday.

Clamp machine, some of the castings  
for nuts and bolts. Turning them &  
some of the nuts in getting it ready.

Wires being of 1000 c.

Wires being of 1000 c. and so on  
and so on. Some of the wires to have  
with some of the wires to have  
very gradually. Some of the wires  
of an even more the same.

The wires are now ready for use  
a part in readiness for running.

Saturday Aug. 21. 80.

Locomotion, gear down to second gear  
 grand down; Amos in ship  
 Amos out of the ship, left.

Selected details as follows. Examine  
 given by J. David, by station center  
 with current in gear from  
 observation described below.

Wind ground. Mass gearing station  
 locomotion. same making for  
 pulling former Amos making  
 gear down. Amos making  
 for and for and Amos making  
 with making calculations for a  
 lifting station in N.W. station  
 working in Amos making  
 Mr. Saltseder explaining  
 starting of Camp today.

About Mr. Chas. Smith's work  
 X Park in Amos

Monday Aug. 23.

Amos St. High. Mass locomotion  
 All day yesterday. No. 1. Amos making  
 in the heavy and a large party  
 in Amos making station.

Other light station. Mr. Amos making  
 Amos making of station pulled into station  
 Amos making.

Locomotion track, Amos making  
 station clutch of slow speed ring  
 track.

Locomotion with one in Amos making  
 Amos making Amos making.

Amos, Amos and other in Amos making  
 No power in evening Amos making  
 in Amos.

Amos making. Mr. Elmer and a friend  
 Amos making Amos making.

Tuesday Aug 24 1880  
Camp. Bakers made found of single bit  
bottomed gauge.

Bakers told, new being used and some  
the pump was well.

Shovel & Pile, used at camp. Carley  
and mine getting up same & some  
from Murray pump.

Gravel vacuum. Pump in Corvallis, Ind.  
Apr 2nd. Rehandling, one was 1/2 inch  
and put for bit. Gravel.

Visited Mr. Wilson.

Shot crabs in river heading to  
the east river track.

Wednesday Aug 25  
Pump, set. Empty, started,  
vacuum, bottom gear better out.  
Improve the dust,  
Milling. Water. Saw getting up  
the washer described. Not both.  
Pump. Bakers, Corvallis, Ind.

Water was over 100 ft. 30 ft.  
alone, on sand, for 20 ft. from  
bottom.

Camp, Corvallis, Indiana and Shiloh  
by Mr. Bakers. Both No. 100 ft. 97 ft.





Saturday Aug 28

Galvanized, large sheet metal  
x 1/2" and 1/4" thick in stock  
building.

Paten-ice-berg finished second copy  
x 1/2" paper for Envelope. It was in the  
cabinet of the office of the

Conductor. Mrs and boys did not  
attend building with conductors  
Having been meeting him  
finished part of the line

After school. Seen with some  
and, looking on Grand Machine  
and some other. In the  
presence of a number of the  
Hawkins on the line. The  
Se. of conductors in the line  
N.Y. Clark in New York America  
for large machines. Smith went  
to improve the position of the  
electric Conductor. Discovered  
some conductors in present

Sunday Aug 31. 80

First Night in Saturday after  
the line. The morning -

Foundation. Mrs digging the foundation  
on New Dupples. The building with  
the factory -

Found. The side of the building  
for Gas Machine. Being finished  
the line with the building for conductors.  
with, and passing up through the  
making a good machine. Found

the box, by the line. Found  
working just class

Found. The line. Found  
the line of the line.

Foundation. Mrs found with the  
one line for up in foundation. Box with  
water. The line. Found the line.

Wednesday Sept 1, 80

Spent the morning and afternoon  
examining the station, and the  
of the station, and the  
in station, and the

After dinner, I went to the  
Asiatic Museum, and  
of the station, and the  
by the station, and the  
unimpaired of the station

After dinner, I went to the  
of the station, and the  
of the station, and the  
of the station, and the

Thursday Sept 2

Spent the morning and afternoon  
examining the station, and the  
of the station, and the  
in station, and the

After dinner, I went to the  
Asiatic Museum, and  
of the station, and the  
by the station, and the  
unimpaired of the station

After dinner, I went to the  
of the station, and the  
of the station, and the  
of the station, and the

Friday Sept. 22-80

Maroon, pump, lab lamp, battery, etc.  
Remaining in the tillers

Edith Rindas to clean up the house  
plus several by his grand children  
Indicate of Decar as follows

Condenser, pile pump, lab lamp, etc.  
Kiln, pump, for condenser, and  
bracket on top poles for light meter  
for battery, and Min. condenser  
mashine, etc.

Indicate of Decar as follows  
plus, in water, etc. and  
etc.

Edith Rindas, man by Decar and  
Decar use a couple days  
brought up for cleaning

Saturday Sept. 23

Here Decar is very faithful and  
completing the form  
Indicate of Decar as follows

plus, in water, etc. and  
etc.

lamp stands, Decar making, etc.  
etc.

plus, in water, etc. and  
etc.

plus, in water, etc. and  
etc.

plus, in water, etc. and  
etc.





Friday Sept. 10

Factory, heavy beams secured to the roof on which to attach hoisting apparatus.

Pump Motor, working very satisfactory. On pump chain caught several times. Muscattling stopping and moving back a little to disengage, tested 35 carbons got 27 good ones.

Widens. Report of Smith did not get. Spin factory.

Forster, Johnson procured a gas shandair left artistically with electric fixtures and experiment on different means of arranging them.

Patent made copy, English No 15.  
\* on dynamo for current motor

Saturday Sept. 11.

Labas Smith, Herdies Edison with employing two men and accomplishing nothing.

Factory, pump later, open to create catching of the chain. Gas arrangements by hole, filled with water and plate with muscattling later and a resulting, shut down hoists put on for cause to conduct away gas heat.

Gauges, dynamo, casting for base & rest.

Drawings. Work finished Pat. office. Drawings of dynamo machine drawn by Rowlands, one small one of which was left here by him as his last work.

Work, General Schuster on call. 1 p.m., a number of the men on the Dean on clamp machine and plus culture, Mr. Baetula, making efforts to get. Factory started, Ed. McShan on call. Motion conductors etc.

Monday Sept 13.

Large planer. Reordered made  
X at home at shop to day.

Compressor. refilled yesterday past  
shop and set satisfactorily. Working  
to day.

The Working Machine made by Tins  
paid to day, but did not work.

X up to expectations. Mrs. E. is  
sketches another drawing in garden.  
Since the Book No 126 page 7

Appt. Mrs. Clarke in Philada.  
to note progress of Phil. Allen Aug.

Tuesday Sept 14.

Reordered made copy of English in  
system to maintain Electric Machinery and  
commenced copy of

Early the Machine taken out to clear pit  
and reset. Found again working and  
the better work. Large construction. Working  
by morning fall.

Reordered, little Englishman working after sketch  
of Johnson Book 122 page 18 de.

Miss May Eaton

Wednesday Sept 15-80

Camp No. 18, 1877, 3, 25, well. Col. Miller bearing. North New into. Patient off the business at Factory this afternoon.

Large dynamo. Fine castings made. Kona Ergon turning the magnet press.

Mulder, Manager of English. Robert (Pat. Office Museum) Nurse went to N. B. in afternoon.

Thursday Sept 16

Factory. Pump started again. This afternoon, and morning satisfactory.

Plants. The large planter got out and started. A new chain and pulley lifting arrangement got for use at planter.

Large dynamo. Working pieces out. But the pump didn't go. Clarke,

Friday Sept 17, 80

Miller bearing. North New into. Patient off the business at Factory this afternoon.

Robert finished English in. Completed from American No 210, 215, 216, 219, 220, 227, 228, 229, 230, 233, 239, 240, 241, covering 58 pages and making 111 claims on Camp & Danne ways of manufacturing it.

Many top pieces for magnets, but large planter is to be done. Done. Hauled badly and pulled. Laid off. Try to remedy it.

Factory. Pump working good. No. 1800 right when it again caught. Will be started out and replaced with worms or some pipe, in place.

Call for. When all finished a couple with cylinders instead of plates, and the second one will



Saturday Sept. 18.

Walt. General part. Work. Experimented  
continued in insulating materials  
Mr. Baishikov at work at Power  
Pump at Factory, numerous for  
making it work reliable. Niplov  
at work on Station Conductors  
Smith commenced in wooden fac-  
simile of large American commu-  
tator, to commutator. Logan on  
castings of large engine. Dean  
and assistants on blamp Mch.  
and fiber furnace.

Gas data. Russell brought in one  
of Gas & Power data of 4 Hards.

Pat. Drawing Mito making drawing of  
Palmer mch. Francis making one  
to top. mch.

Conductors, then insulating lamp  
line, with preparation made on  
cable noted Friday.

Monday 22-80

Absent. Mito absent since Saturday  
last night. Leave that  
Mr. Kense was in Prida pushing  
to order and see about power. So  
leave pump. Mr. Clarke also  
in New York to see rotary high  
speed engine on exhibit at  
American Institute fair.

In Baku. Read during my absence  
a portable radio. Kettle and a man  
you looking the late etc.

Picture, also read during my  
absence a lot of chemicals &  
all sold a globe, for experiment  
re. water lamps.

Re. Pump. Long pipes put in bottom  
pipes, extending nearly up to pump  
place of short nipples from  
middle.

Station, commenced work on small  
pump & addition for bed of large  
cable.

Miles No. 114 $\frac{1}{2}$		
Line Test	137	✓
Class. Electric Co. motive. Whistle Road Light	5	✓
Mile	113	✓
Station	182	✓
Line	123	✓
Station	116	✓
Line	57, 102, 108	✓
Station	167	✓
Line	150	✓
Station	129, 160	✓
Line	151	✓
Station	100, 137	✓
Line	152	✓

**Mott Journal #5 [PN-80-09-23]**

This is the fifth of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. This pocket notebook covers the period September 1880-January 1881. The front cover is labeled "154" and is inscribed "No. 5 Sept 23. 80. to Jan 16. 81. C. P. Mott." The pages are unnumbered. Approximately 100 pages have been used.

Thursday Sept. 23<sup>rd</sup> 80.

Conductors. New summer &  
again opening conductors inside  
X for June 23<sup>rd</sup>. Other publishing  
Museum with some No. 7 for reading

Absent: Marcus Edison. Upton  
Schl. went to N.Y. 8-2 I mean to  
visit some Gas House.

Insulation. Hearing & continuing E. G.  
X for a note for Ketch for insulation.

Wilder, Whiting of  
Kend. Fund

Arm. Ted Holden. Sketch made by  
Mr. Brewster for large glass.

Friday Sept. 24<sup>th</sup> 80

Conductors. 15 new today on insulation.  
X for lamp conductor. From changing the  
Laboratory, some to outside of building.

About Museum Edison Upton & Francis  
Ketch about middle of afternoon.

Some pump. Seymour and tests done  
X for to make pattern for some pump.

Edison received at Laboratory and  
Brewster for refueling work of E. G.

Saturday, Sept. 25. 80

Lamp, & Co. still put in the lamp  
at Factory this morning, got off 4:00  
arrived in glass m.

Glass Four boxes recd. at Lamp  
Factory.

Glenn McKee went to Phila.  
with balloons for pump, saw, & other  
from McKee & Co.

Also 30 boxes recd. at Lamp  
Press for reproducing work of the box  
and 30 boxes here in afternoon.

Visitors, Am. & Co. to examine, from  
Patent office.

Monday Sept 27. 80

Large Plaster, during yesterday  
Marion built back to glass under  
the large Plaster, and the iron support  
in.

Manufactured Lamp, up to 10  
ft. alt. - 2.7 ft. good Lamp,  
up of 100 ft. fiber, cutting out now  
at rate of 3-52 impeded fiber  
per day.

Pyrex running good all day, and 18  
Lamp, success fully sealed off.

Carbon Formers, Fredy & Co. from  
offered to Factory making enough  
to keep 3 flasks, and Mac glass 1  
More big, can get not about 100  
per day.

Tuesday Sept 28.

Remains at Factory working  
fiddly again 4 days, 2 or 3 times  
on his morning.

Continued. The Controller mailing about  
vacation on the number in relation to  
the accounting to determine the proper  
proportion between contribution & take a  
give best results and have leadership  
by giving to the kind of the increasing  
Bond 106, page 3 & 4.

K. J. Bergmann, 10000, 10000, 10000  
 K. J. Bergmann, 10000, 10000, 10000  
 K. J. Bergmann, 10000, 10000, 10000

[illegible]

	V	Système de positionnement par satellite	7
--	---	---	---

He caused to have some of same

X ~~There is a corner built by the~~  
~~second story.~~

22. Being with the mother

Office Laminar changing position  
in down stairs office for more working

Flat making, either today should give  
a new idea in making the wine in  
young tub, the small butter through which  
the wine pass, is heated all over and  
compressed against the wine forming a  
longer seal.

Heat cup with copper base around  
core of armature of large dynamo  
supplied by one of machines connected

Xas. motor, up to 240 Revs. running 30

Minutes, Medical Books 116 pgs 88¢.

At 300 Rev, 7" increase - 4 test lbs. wt.

5.14. Dec 16° Temp of Shupe at close 88° F.			
---	--	--	--

Wednesday Sept 29

Base Electro on road on Saturday was  
X to day, replaced to station

Repair on today, water pump, new pump  
X No. 100 has been repaired in and  
has 100, with 0.15, 0.60, 0.60, 0.60  
X Building for station

Call from, 100, 100, 100, 100, 100, 100  
X to day, 100, 100, 100, 100, 100, 100  
X and 100, 100, 100, 100, 100, 100

Order made of new 10 day and 100  
X The station, 100, 100, 100, 100, 100, 100

Test Factor, 100, 100, 100, 100, 100, 100  
X at 100, 100, 100, 100, 100, 100

X Heating, 100, 100, 100, 100, 100, 100

Thursday Sept 30 80

Base combination, 100, 100, 100, 100, 100, 100  
X connection ready for use

X Station, 100, 100, 100, 100, 100, 100

Decorations, 100, 100, 100, 100, 100, 100  
X Station, 100, 100, 100, 100, 100, 100

X Station, 100, 100, 100, 100, 100, 100

Friday Oct. 1. 80

Getting some letters for rekeying  
of inspection of construction for his  
plans, and for sufficient this time  
to be a good day.

Went to Factory for the  
a large batch of furniture also later.

Apple State house is now in progress  
large flowers.

Carton frames. Several sent to  
the school at work in the  
additional carton frames in  
more.

Carton bladders. Arrived some  
for a lamp in the per holding  
the whole drawing carton

Saturday Oct. 2. 80

Papers "World" to day published and  
quite absorbing for delay in making  
demonstration here, attributing it to  
delay in getting Fats Alberts.

About Edison Baichuan Johnson  
went to New York at 6.30.

Went to home with Miller.

Work done at work. Shop at work  
on Lamp Drawing, Dean & Assistant  
on lamps for Blanks and on Lamp  
machine. Painters finishing up  
New drawing office. Factory having  
not given a number of lamps -  
Francis testing them. Winton Hammer  
at work on Station condenser.  
Mr. Baichuan at Factory. Johnson  
at work on chandeliers.



Wednesday Oct. 6

Chandeliers in Sunday School  
put up chandelier fixtures in  
upstairs Laboratory.

Visited On Monday <sup>the other room</sup> Pullman  
of the Santa Fe Co. came to see  
about an electric motor, for oper-  
ating transverse table for cases.

Discharge vapor. Mr. E. making pro-  
periments in heating carbon in  
vapor of Mercuric.

Combination Gas, Machine fixed  
today and supplying steady gas  
for demands of the factory.

Quartz, Men record on night watch  
Quartz, most of them across to day

Aug 6

Met. Andrus, finished a care-  
fully made balance. Met. and  
delivered to Nichols in Laboratory.

Visited Mrs. Kell offering plans  
for lamp factory.

Illumination, about 100 lamps let-  
ter stairs in Laboratory part of the  
time at 11:00 to 12:00 at night  
in morning about 2:00 p.m.

Engine, California left and  
Al. Swanson put in charge  
of Engine.

Thursday Oct. 7. 80

About Mr. News at Chicago.

Sap Box. Andrew finished pattern  
for casting of sap box - box to be  
made at point of connecting down from  
with main.

Chandeliers. Got in French ones  
making a chandelier bracket after  
design by Johnson. 25-153 pgs. 44

Chandeliers. Lin. back Edison lamp to  
slit near gully, round and round  
bottom 3300 pgs.

Insulating machine. Mr. Torrey  
designing and making drawings  
of machine for putting insulating  
material in tubes after same are in

Friday Oct. 8.

Paton's. Made another copy of  
English Patent No. 111, subject  
of feeding to maintain equal  
pressure. 11 pages.

Intelligence. Blake & Edison evidence  
being taken 15 day.

Miter. Tugman's pen and bracket  
the mechanical part of miter. 11-111  
1000. 1000 with three deals.

Chandeliers. West-Tree putting up  
Chandeliers & brackets up at home. 10-111

Lamps. A number of lamps sealed  
with short bars from fitting first on the  
lamp and then glass to glass were  
sent to laboratory.

Saturday Oct. 9. 80

Interference Edison & Blake evidence  
continued here to day

Examined Mr. Pinner brought 30 lamps  
filled with gas

Went general Factory here turning  
out and Francis testing out and made  
number of lamps, were progressing  
fairly on large dynamo. Examined  
assisted on lamp machine and  
file cutter. Rang on circulating  
steel conductors, lead conductors on inside  
work of factory sufficient for building  
Man More, stand for China & Japan

Monday Oct. 11. 80

Visited Dr. McLaughlin.

Conductors on other light line were  
from station to Labadie to Elmore  
case of lamps.

Large Arthur suggests a lamp  
shape to be used in that shape from  
Glass Factory.

Rippling remains, rubber line.

Lamps. Preparations being made for  
testing about 100 lamps to night.

Testing Francis testing 22, 100 Testing  
Lamps. Bis 171 pgs.

Tuesday Oct. 12 80

Shop carpenter commenced  
work on black engine shop.  
Made old one 22 ft x 11 ft.

Lamps 78 lamps were started  
at about 3 o'clock this morning.  
Box No. 171. 2<sup>nd</sup> lot of 100 lamps.  
The burning 3:30 only. 93 & 100 No. 171.

Paint glass, 3 in glass 2 x 3 ft.  
Used for painting apparatus and  
now grinding down the edges.

Commence, The casting for commences  
from which had and being turned  
by Vignier for large cylinders.

Wednesday Oct. 13 80

Photography, Freeman finished photos  
for Mr. Batters 5 to send at  
factory.

Pump suddenly stopped with 22 lamps  
for the engine heated a few lamps  
destroyed all vacuum lost.

Car. The black car machine  
used on work against today. And  
gas pump same as before.

Wheels, a black horse wheel here.  
Remble has black wheel from San Francisco.  
Also 8 ft. Andrews Piston, Open, Dist. N.H.  
Wales, for engine buy low and make  
summing double ordinary.

Lamp tests. Box 171. Day 23.  
No comparison made, number 23 not  
made to test whether result is same as before.

Thursday Oct 14, 80

Winter, Barb. by road,

And man digging trench for pipe  
about two feet deeper to extend  
X pipe further in road and man com-  
pleting drain it.

Hand hat given same last evening  
X given not at factory,

Cam. Mr. Edison find one of regular  
X has jumps with water. Edison

Notary, Eng. West Pat. Mfg. Co.  
Light. Edison Co. 700 1st St. 6 ft.  
Cam. 6.00 m. 6.50 l. Edison 500 Rev.

Has construction machine. X  
X given to day, including first class

Friday Oct 15

Exp. Co. Penitentiary, 1st St. 1st St.  
Glass House & Carbon Department

Paper, Penitentiary, 1st St. 1st St.  
Exp. Co. 25.50. 1st St. 1st St.

Mon. 1st St. 1st St. 1st St.  
And 1st St. 1st St. 1st St.

1st St. 1st St. 1st St. 1st St.  
1st St. 1st St. 1st St. 1st St.

1st St. 1st St. 1st St. 1st St.  
1st St. 1st St. 1st St. 1st St.

1st St. 1st St. 1st St. 1st St.  
1st St. 1st St. 1st St. 1st St.

1st St. 1st St. 1st St. 1st St.  
1st St. 1st St. 1st St. 1st St.

Saturday, Oct 16. 80.

For changing land's note given  
 Fine paper, Aug 10, 1880

About Mr. Wilson went to Mexico  
 about 12.15.00

Can't see a show case in room  
 glass cabinet, fine with canvas  
 and found in the corner, slip  
 back in the shelves, and work

Car, baskets, boxes, arranged  
 for heavy cartons in  
 gas in room of oblique and  
 cat

Water very low, descending slowly  
 was and pumping from Edison  
 Pump or work in gallery. Engine  
 into the tub was down  
 under the floor

Carrage, Mr. Wilson sent  
 note of carriage

Pumps, like the 5 pumps, working  
 by the same pump were not taking  
 water and several set out  
 each side but all are down together  
 up & down

With general listing of lands  
 the quantity, more on large grounds  
 of the property, and the amount of the same

Monday Oct. 18

Absent - Science Phila. Union also  
 X at Princeton, N. Y.

Vigilante Bagmen shown as snitch  
and in resistance arrangements

Prints taken, received

Acetic acid for heating water for  
X-rays,

Picture show all making me in which  
reverse current reverse magnet and  
forming loop in which an tin plate  
which before will be when commencing  
the motion to mechanism which moves  
the disc pointers

Daughter, building fence  
and daughter-in-law moved in

Tuesday Oct. 19

Bush lamp, one bought by Mrs. G.  
Jared tried this to Mr. Wm. Smith  
put in.

Pumps. Mr. B. C. Fisher experimenting  
in pumps, cut off jaw tube and  
found mercury rose and down again  
(tube worked well, run about 14 lbs.)  
Mercury bar, made - Rb No - 596. 67

Visitors, Mr. Irwin of Irwin  
 & Son, St. Louis.

Almost all in N.B. in search for  
Pilkington, Maj McE. in good  
hope for return to California

Chlorine Vapor, From an heating carbon  
in the sulphur coated a little in  
chlorine vapor coated nicely & I  
succeeded





Friday Oct 22. 80

Spent Mr. Krumm's time to N.Y.  
Mr. Wilson's time - home.

Acc. Lamp. Wilson & Fenn. who con-  
quer the the experiment on the lamp  
on laid up to day with perfectly  
success.

Meter, consisting of two lamps passing  
through balance meter, connected by  
wire made by R.H. Oct. 18. 80

Visited. Telephone moved to Boston  
Hall

Visited Gas experiments on Oct.  
By Francis B. 104 pgs 175

Rain, heavy rain. S. in south  
H. in north for good supply of water.

Saturday Oct 23.

Intelligence Gave to Man in Edison  
copy of Smith of T. Co. & paper on the  
Smith paper eastons in the app. in  
to the lamp. 1878

Lantern. 5. both delivered by R.H.

6. 2. 2. 2. Edison & Smith in suit.  
Automatic Magnet Signal

Annotation correspondence of Edison  
Spencer of some plates sketches by  
Edison given to M.H. for patent office

Visited Electrician's Bureau.  
Agent for Boston Boston

Monday Oct 25-80

Exp. on yesterday air-  
pump. Trans made to Phospho-  
res.

Trans. 13. New form. describes up  
and working nicely.

Exp. on Trans. up on at factory  
for keeping the air in of the air  
pump to extraction.

Widow, Bailey of P. & S. Bailey  
4 May, 1880, 12 p.m. in evening.

Sketches in Book No. 60, pages 1 to 5  
Transverse forms of Lamprey, <sup>Sketches made</sup> east only  
means of heating.

Carbon, paper. (continued) in <sup>the</sup> paper  
Sketches and Map between Trans  
in furnace, carbon having smooth  
and like shell.

Oct 25-

Lamp. on pump, Naphthalene  
connected with Gage like carbon  
for first. Shows oxidation after  
built up easily. Naph. cooled &  
tough. Naph. then burned in water  
in furnace with Penrose solution  
carbon being used.

Water Gunbar taken gully for sketch  
for pump & motor to be taken there.

Tuesday Oct 26.

Liberty, Bacteria & Virus at Phoenix

Acid Factory. Filter heating in steam  
spiral for heating factory

\* pipe for heating factory

*Speleus. Nephelina. Bonn 1944. 178m*

Relies on his packages from U.S. Rep.  
Has been this morning five weeks

See also the summary for results

Search found Mr. M. made <sup>known</sup> of our aim on Smith's boat which he claims to save <sup>the</sup> the double shipping necessary in connecting subscribers.

of new advice on Smith's board

Which he claims to have seen

The double blugging necessary

connecting subscribers

Wednesday Oct. 27.

Las Montañas Andinas furnish a mass of space to place inside. Much for passing through gas during combustion.

space to place inside Mural for passing

through gas during contraction.

Amalium. I can commence laying.  
on on slate

X	in one plate		
---	--------------	--	--

Gaining little 37 tested by Francis 27 Oct  
Xenia off the coast got no sparrows  
at 3/8"

Healed off the could get no space

at 3/8 in

Conductors, saw from station to light  
X draughtsmen. Room.

X draughtsman. Room.

Diacyclic, 40 to 45-carbon lactone  
to acid in lactone ring by chain, decaying

X to day <sup>5.</sup> on lecture notes by Channing, Sunday

*Sigadon disparis* n. sp. Anomura  
X in adult from yellow fever at  
Havana, Cuba

His death from yellow fever at

Harana, Cuba		
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Thursday Oct 28

Back. Near making cutting machine  
ream possible but smaller for  
back

Water pump running in water  
from pond to top of beam for  
water from gully

Intake pump, Health ribbons - Blake  
K. Wilson

Cable, 25 wire cable and 25 wire  
cable. are in place by Home  
and both complete

Applicable. Black engine 10 hp.  
all shafting & machinery open 10

Spade holder then <sup>with 400 lb and 25 inch</sup>  
discharge. 1st flange. ring to hold down on shaft  
in line to hold the shaft in even flange.

Friday Oct 29. 80

About Mr. Glantz started for home  
this morning.

Visiting Maj. Evans. With note.

Tested, to day Mr. Peterson struck the  
X-edge of testing testing chamber on  
pump. same as lamp.

Water Dynamometer taken to gully

Spent up. water in gasoline gas. came  
off very nice

Saturday Oct 30. 80

Diamonds from Mrs. we going up to court.  
Sinner side & steps

Amation, long crystal strips made.

Work general. Experiments on heating  
carbon in gas. Seals sending on  
large amation. Long still on window  
long conductors. Iron etc making  
steel metal. Gas filter running

Alarms. Setting up facility for heating  
Mr. Bostwick: experimenting and having  
the pump changed to new form  
without mercury glass. Preparing  
to pump water from gully.

Regulation Sketches of Apparatus for  
Regulating E.D. P.R. 60, pgs 12 etc

Notes where present, conduct, metal, to light  
fall at minimum feeding. Preheated the oil house

Wednesday Nov 3

Street lamps on Monday night several  
lamps were burned on line past E.D.  
lane, and on Tuesday the entire line  
from Barmans to Factory was ex-  
ploded and burned till nearly 12 o'clock  
on Monday night. Bombards here with  
Magnific. lanterns (strong beams) with blue  
light, good but not powerful enough.  
Reider man of Glasgow, here on Monday

Miscellaneous plan. Drawing etc.

See Lyster Eng. recd. to day. 5th & 6th 1880

Walter Jacob. Metal taken for sample, in gully  
near the base, and yesterday becoming  
taken down and dropped into trough

Notes on metal. Sketches by Mr. E. P.R. 60, pgs 12  
1880 on Oct. 31. also Nov 2. pgs 12 etc

Nov. 3

Water pump started in a.m., and giving  
flow at Pond Summit at 10 gal per hr.

Telephone station, established via the  
telephones in the past, in Laboratory

Abundant set from Saturday till Friday  
night.

Thursday, Nov. 11, 80

Visitors. Bidemann and the  
junior in effective work will also  
from Geneva. Post. Bala Agent  
Parker, Dr. Williams, Ed. Ambridge.

Abundant set from Saturday till Friday  
night.

Cardinal Cavers. One Tuba. Cavers taken  
to factory, to be put in lamp to 60.  
Abundant set from Saturday till Friday  
night. Laboratory & ex. painter.  
Cardinal Lamp.

Friday Nov. 5-80

Rubber lined pipe, another lead made

Draughting, Rhine, etc. to assist  
draughtsmen.

Gasoline carbons, balance of bread  
X Carbons sent up in lamp. etc. etc.  
225 ft. ca. 100 k. 116

Prints. M. etc. made some blue prints  
X Print. sent from 20 drawings by all  
day experience

Spud cartridges in hot glass tube  
X through which gas was passing, pressure

Large glass, carved in Ingham  
X and the extra one from 10 to 15 by  
Andrew

Improvements, etc. etc. etc.  
X and in Laboratory Department 15  
Haining

Nov. 5-

Water, John Alt. finished and 100  
X Laboratory, the balance made into  
rubber cups.

Spent Mr. Balthus let home all day  
sion

Spent Mr. Russell, brought another  
X book of canoe

Saturday Nov 6

Rice leaves, Bamboo used today large  
X coarse green

Amation con. Logans turning. Logans  
X trial, come for large Amation

Road raised 1/2" by 6 hrs pumping

Let Mr. Clark ab. since Oct 29

Wrote journal of past week. Utter &

Hammer still on tabulating statistics  
of Rums courses, Edwin & Francis

travels, continue in gas. Commenced

X putting out lamps in studio. Dean

& assistants on Amation. Conington

on commutative, Act on Mules

Seven on Magnitude of large dyn

ame

Nov. 8

Sunday Nov. 7

Sunday. Engine running in after

noon & boys working. Surplus at 10:00

by hand. Sometime during Saturday

night, the water began to rise. an

hour above. Mr. Beethoven making

some experiments on sailing

of the mechanical film camera. 3 out

of 13 passed test

Monday Nov. 8. 80

Test of lamp, with burner. Laid out

apparatus. Mr. Beethoven also testing. More

work done at factory yesterday. Mr. Beethoven

test in the night. Mules off the road. &

Superintendent returned & placed in another

place. Mr. Beethoven being taken down to

factory. Mr. Beethoven lectured. The first

lecture in the evening

Spokane, bearing of machine. Heated

range, oil, water, Laid out who had had the

also in the



Tuesday Nov. 9, 80

Interference evidence continued.

Kitter, headlamp repaired & replaced lamp on.

Wednesday Nov. 10.

Plumber Japanese now very damp.

Interference evidence continued.

Carbon relays and monitor, finished by Andrews & Campbell for holding line passing the current in series.

Thursday Nov. 11, 80

Interference evidence cont'd.  
Great Batch searching for the original wire transmission.

Friday, Nov. 12

For south. Motors, were plan with  
impression of balance must

Saturday Nov. 13  
Attention given also to the by received  
day to the latter.  
Find plate for large dynamo and  
Center Allen Engine damaged at work.

Unregenerate to last week. Motor S-13  
engaged, principally on Interference.  
Little doing at factory in consequence  
of delay in getting screw, which, which  
in short waiting words on dynamo &  
formation, left at work on Electric  
dynamometer. No. 10 testing the  
balance motor, which is giving  
good satisfaction. Andrews finished  
apparatus for measuring action so  
the ones may be built up without  
heating other parts. Also made made  
for examining some at a time  
straight inductance enlarged ones

Small engine tried on small dynamo  
found very inaction greatly necessary  
at least engine

Sunday, Nov. 14, '80

Water heater set up in boiler room.  
Kettle spinning on door between  
machine shop & dynamo room  
for on large mouth, to facilitate  
changing machines.  
Pipes with 18 gaskets to be caulking.  
Pumps all 220 gal. by weight. 30 gal. man.  
Pipes with 18 gaskets to be caulking.  
Pumps all 220 gal. by weight. 30 gal. man.  
Pipes with 18 gaskets to be caulking.  
Pumps all 220 gal. by weight. 30 gal. man.

Monday, Nov. 15

Red plate. Sub. is being to shop.

Hot clamp. Attention to day heater.  
Clamp through globe & melt the glass.

E. G. Co. Board of directors held a  
meeting here in evening.

Visitors, reports of Herald, some  
other interested in the E. G. Co.

Tuesday, Nov 16, '80

Boat, a load several very large  
bundles of Bast-fiber used at  
factory today.

Rela. Mr. Winton with family.

Meter, records set water cap. in use.  
Kend. from in to work forster. 10 gal. more  
rapidly.

Carbons testing before heating in lamp.  
Run from 500 up. Bk 106 pp 65.5 c.

Heat boiler prepared & steam admitted  
at factory.

Telegraph wires. The western Union wire  
now changed from office to laboratory.

Main pump, by which on machine. 7.5 gal.

Clamp used by 100 gal. pump.

Wednesday Nov. 17, 80

Papers. Sum of today gives aspects  
of lecture by Prof. Weston in which he  
states greater economy & safety  
for Masini's Lamp than for Edison  
but gives preference in efficiency to Es  
dynamo machine. Boston Herald

of Nov. 10. brought by Upton yesterday  
has my fan article on Edison. Printed  
later by light with letters d, s, & R R  
with M and S over

Engine foundation, New Remonding side  
from under end of engine room  
for foundation for Peter Allen Engine

Back Herring is treating Back  
for acids & various solutions to  
soften the hair outside. B.R. 125 pp 102

Light wires run under the R.R.  
Laid 4 or 5 feet out in rear of pit  
to B. Making some arrangements for the  
new cable for the dynamo

Thursday Nov. 18, 80

Weight of carbon. Six cartons of live  
Krus. on 15<sup>th</sup> in cartoning. Further  
papers have carefully weighed new  
found to lose a much greater part  
by quick carbonization. B.R. 106 pp 29

Some sawdust made Back Lamps  
photo today gave about 1400. Sheds  
at 16 c. B.R. 124 pp 15 etc. sent up

Paper Herald, article on Masini's  
incandescent lamp with solution  
and remarks of Edison about it.

Fiber, package of fine black fiber  
very strong used today

Friday Nov-19, 80

Papers. Scientific American of this week date Nov. 17. has good article following claim to be the pioneer practical incandescent lighting, with Messrs. Sawyer & the Englishman, imitator.

App. dynamometer, finished by J. H. S. Ott

Long illumination. floor came out the shape and flames went all night.

Sadler, put in lamps after exhaustion vaporized by heat, across the carbon & destroyed it near clamp.

Mercury. in experiments on lamps in factory last night, an examination of the mercury showed it to contain Potash & was which had been used during

Saturday Nov. 20

Start lines. The cable to start lamps except about 1000 feet across and Ireland finishing a job for at an average of 12 men since Sept 28<sup>th</sup> 80.

Papers. Prof. Norton publishes a card in the Sun, to effect that this morning his lecture was a mass of mass of their reporter, but did not correct them or point out the errors.

Large dynamo, polar extensions put in Logan Bottle, perpendicular to bearing on the

Spark. Keys. The single point spark plug used on lamps, sparked so badly that Mr. B. had a lot made with contact.

Nov. 20

Hot Mercury. Mr. B used air from  
patties, and gas jets to heat mercury.  
For several, found to get quite hot.  
Used general fast row. Red state for  
engine in shop and preliminary plan  
of parts in it. Dies seemed on the  
armature shafts. Some progress in  
other parts under hands. Mr. B  
repairing at factory in time, a  
heating pattern in lamp. In  
concerning also in the pump &  
heating mercury. Mr. B. later on  
iron on power & motor. Also  
on depositing carbons by electrolysis.

Monday Nov. 21.

Factory. During yesterday men at  
work at factory putting up wires  
and piping for mercury pumps.  
using iron stop cocks in all the  
piping.

Carbonizing Morda finished by Andrew  
and tried last night. Morda up-  
right, and carbons to hang over  
second pump, and be weighed at  
the bottom.

Engine, cylinder repaired by Alfred.  
Job made and some delay caused  
this morning in repacking.

Bullseye, Mr. Glauke at work on dynamo  
for 1200 Rev. Bullseye engine which he  
informs me they are waiting for time  
to be on driving dynamo.

Nov. 22

Electrotype, Ashcroft experimenting  
for depositing carbon by electrolysis he  
resists yet that appears satisfactory

Magnetism, Upton & Clarke made exper-  
iments to determine whether zinc base  
plate could be deposited into silver  
X small bars of iron connecting the bolts  
with globe made to rotate difference in-  
creased

Paper, Heraca has short notice arranged  
Foreign claims the last of Edison's  
X lamp being on exhibition at C. B. Mumford  
S. Kingsington

Articles, made for meeting place  
X for blowing and successfully used  
as animals for outside use

Tuesday Nov. 23<sup>rd</sup>

Papers, Post of last evening published  
interview with Prof. Barlow in which he  
says. E's lamp is 20 years old and  
X Marins says and that E has been  
searching for ten years for what he  
has found and got.

Visited Mr. Miller here with assistant  
going to work on patents some 30  
X cases of which the drawings have  
been prepared and ready for him

Articles, Dean has saw on small  
planer but was not steady enough  
X preparing to use it on lathes now  
cutting the rings

Wednesday Nov. 24-80

High vac. Last night. Six Bunkers  
Lamps were sent to Colorado City. Two  
highly exhausted. Water very good  
and turned about 3 hrs. on pump very  
economical and gave fine light.

But strain Mr. Glass determines that  
dynamo & motor in same building  
like belt steam will be equal equivalent  
the other

Visited Mr. Glass. He says the  
frame to be shown around by the  
Buckman & mine

Chemically treated further carbon was  
carbon & silica chemically  
by Dr. Haas to remove all organic  
and foreign matter. were sent to  
the factory to be measured and  
then of better quality than the 4th

Nov 24

Condensing Hammer made small  
by lamp & condenser of mica and  
put to place in lamp along side of  
lamp

Visited Thursday Nov 25

High vacuum. Last Mr. E. Harris and  
Assistant watched a lamp until no  
blue could be brought by magnet  
were about ready to set off air  
gas. set up and lost vac. & lamp  
22 am on was broken about 11 to 2 pm

Spent Thanksgiving, a great many  
absent, opening first of the season

Friday, Nov 26. 80

Reps. Tubing gives fair and starts  
the report of induction into No. 2  
In the main, talks no responsibility  
if giving his observations

Factory. Addition put between Pump and  
and Lamp end of the steam engine  
Glass House removing sections from  
furnace with clamps of all size from  
plasma to replace in glass. Lab saw  
4 plate clamps. Bore running through  
through pump. Adding to the  
before the pump. Pump comes

Reps. on Mr. Glass, preserving continuity  
for 1/2 hr of 1/2 hr. ing.

Also binding glass end of glass, etc.

Water. Engine stopped early, saw  
water pump and boiler, etc.

Saturday, Nov 27.

Glass to tubes & 3 tubes bearing glass  
Lucca this morning

Engine not running to day, no water

Reps. Comes to see mine Mr. Dranner  
give for glass on "City of San Juan"  
2 clamps Norton & Barber one clamp for  
the binding near points of carbon in gas  
house vapors.



Wednesday Dec 1, 1880

Alto. Mott recd this morning from

Walter learn that Sarah Dunkerton must  
celebrate on Sunday.

Spoken sampling. I find in Batts  
No. 125, 100 gms. 90 cts. some chlorides  
and others by Mr. Edson of Sec. 1.  
To submit the sampling was of value  
date Nov. 25-89

Interference. In making up in some cases  
Museum. Laying down on Monday.

Good dust. Near in Sunday. By the  
the few for for grain for burning in the

to S. Carbons. treated by Haidt with on  
Monday, not long ago.

Thursday Dec 2, 1880

Albert Clarke took Buss. cart  
to N. Y. will go thence to Philadelphia

Robert "Triton," letter of John, coming  
being a boy and others away.

Vac. Experiments. All up, lamps and  
samples moved by being to factory to be  
continued there.

Chlorides. Address in using the alcohol  
as solution could get no result. Let it  
then stand in line after which gas  
fully formed.

Friday Dec 3. 80

H.R. tested but no show. Still the Pump  
Morton ~~shows~~ its worth.

Tri-cylinder Engine the small engine re-  
turned to laboratory to drive pump of  
Hydraulic Press.

Vacuum Pumps made last winter are  
abandoned. Hoses making new pattern  
vacuum tested by Magnin, spent wire  
and they abandoned. Hosing experiments  
for smaller room in sub. building.  
Frances exp. on new pump. Earth pres-  
sure and Mercury passing through  
contraction into chamber thence to and  
through contractions in tubes.

Conductors to factory machine by  
adding wire part of way.

Saturday Dec 4. 80

Below "Sun" short dispatch that  
judgment differed in P.O. Sept 12  
Editorial in London.

Read Mr. Clark from Kansas reports  
possibilities of improving engine last  
of following week.

Pump. selected in case.

Reading, Harniss interviewing in  
the of hand vacuum pump and exp. in  
building stations.

W. A. general, working on engine of  
C. machine. Glass blown. Improving pump  
Mr. Batsch. preparing for better pump  
Mr. Edison exp. on high vacuum  
and lamps.

Monday Dec 6, 1880

Captain, Lord of Sunday has  
report of interview with J.A.E.  
20 days given before starting Oats  
Wash Eng. & the Lamps,

Spent dynamo. Circulation removed for  
turning at factory for running for testing

Indicate, McKenja using Magnet case  
the indicator as per mounting,

Factory, Mtd. from old stain, to complete  
Kip in brain room to him. Kip for  
dust case after repair of ammeter.

Pumps. Man cleaning lower pump  
two pumps in experiment, with caution  
made on separate small table & installed

Lab. blank in N.Y.

Tuesday Dec 7, 80

Glean Murray, Holliman, grinding  
X glass for cleaning mercury

Went down with Mag. took two down

Lamps 4 of the 12 lamps in case are  
still burning after 180 hours

Pumps The extra tube contractions  
pieces not found so good as was  
expected. Pumps pump up and pump  
being corrected

The dynamometer up complete and  
gives same deflections whether current  
around in line or on the table

Wednesday Dec 8 - 80

Silver Silver Dears abandoned gas  
Subsonic bellows and one other character

Good by local setting, Mr. Leland making  
tests of low by local current setting  
Xen machine as well. India lamp  
having been sufficiently demonstrated as  
to accuracy and reliability

Camp shown on by Holger with  
tube for exhausting connected to  
inner tube from inside

Interference quadrupole sent

Pump from new series into  
mercury vacuum pump connected  
with tube from with ground glass  
through which the mercury passes

Thursday Dec 9, 80

Interference studies resumed in  
General telephone case.

American Machinist this week mentions  
Xen Machine lamp as accomplished  
results sought for by Mr. E.

Telephones. a pair brought by Engstrom  
made to admit of operating, further  
away from mouth piece, but up for use

Miss. test Rudmann's engine making  
tests of dynamo, destroyed Amalmer

Seven pumps, working Mercury very  
satisfactorily, estimate about 500 pounds

Friday Dec 10, 80

Paper Santa hats the British  
light for adults in N.Y. as a graceful  
Christmas gift to the baby. says  
We are expected Edison Lamp Co. to have  
held duty but thinks some one will  
produce on that purpose

Large Magnets. Lopez winding into  
to layer double round wire size on other

Sealing off spirit lamp with goose  
neck tube held in back and pulled  
the convexity for sealing off lamp  
with straight exhaust tubes.

Visitors. Hale, Agent of Danac line  
from sample of sortet for furnishing  
the City of Rome.

Saturday Dec 11, 80

Revised. General appeared this  
morning having arrived from Canada  
late last night

Carlton Dupont's Hammer & Hammer  
put loops on wire cartons in one  
piece in which gasoline so indicated  
get sealing but not so easy

See by minute, constants determine  
Mr. Nichols for me lunch in shop  
BIBO No. 118, page 174

Grate bars for burning dust coal used.

Monday 13

Good dust grate bars for dust & air  
put under boiler yesterday.

Small motor, one hour from motor  
X mounted by Bergmann read this A.M.

X Blower ready to start under boiler fires

X 12 1/2 length carbon sealed in small  
X globe & exhausted.

Power pump at 1000 & 2000 or more  
X Lamp sealed off using the blow pipe  
X Spent lamp on straight connecting tube

X Antennae, finished for student known  
by glass, new lamp sealed carbon  
(see Nov 13.)

X Seal by heating carbon (see under Nov 13)  
X 1/2 1/2 inch pipe with slots could do each side  
X 1/2 1/2 inch pipe with slots could do each side

Tuesday Dec 14

Ample. Excellent success at factory  
during the night, power stops this  
morning and a number lamps lost.  
Lies down for the night.

Good dust, blast at work and  
Good dust being used successfully

X Little Prof. Bauger, 2 ladies.

Paper, took column article on paper  
X Dime lighting 1300 from 12 to 14 ft.  
British Eng & 5 Machines for the 22 ft.  
X 2000 x p. each

Wednesday Dec 15. 80

Local loss. Mr. Clark finished  
test & measurements of local loss,  
X since made another to test accuracy  
etc. Loss about  $\frac{1}{2}$  h.p. RLB, M. J. W.

Electrotype, exp. continue by, Asherson  
X note No. 155, page 150

Carbon plating, Gerson put up plating  
X carbon at factory.

Sweden. Harkman fishing in rosen and  
alcohol.

Xivia Buderman.

$\frac{1}{2}$  h.p. burned at 2400 2.34 hrs  
X after being burned at 16 for some time

Thursday Dec 16. 80

Small dynamo taken to factory for  
X iron generator for current for electrotype

Interior decorations. All finished this or  
X brass work fine during joints very satisfactory

X's lamp lasted 16  $\frac{1}{2}$  hrs

Account, Asherson at Hamlet Point bought  
X museum of Antiquities after consultation

Plans hanging, M. J. W. suggested to set them  
X in motion at bottom & opening escape at top

Friday Dec 17-

Water so low. Train darning

Arrived Station. Ashcroft tourist called.  
Saw 200 reports cash machine for Mar. 1900.

George, full time work up west. Laid out.

Spoke dynamo, running from counter  
Shaft driven by blower motor.

Gas burner Co. made of, finished  
by American.

Repaired 'Post' man lamp for Bush.

Saturday Dec 18. 20.

Spoke Elec. Eng. Mr. Edwin from 2nd floor  
the big in the winding of the magnet, it  
was then better to leave and run in ram  
fast fuel through in 20 min.

Work ground. In shop, were being  
checked forward on large dynamo. At  
factory. Blower motor, pump & lamp.  
Muffin. Mounting.

Blower, pump, Elec. motor up. Lamp  
X with upright engine in 10 min. 1000.



Monday Nov 20, 80

1867 lamps inside and about 147 in  
side up and burning last night 181  
7 per indicated H.P. of engine so said by Mr. G.C.

Eng test. Mr. Clarke took in direction  
of engine while supplying 196 lamps  
found 5.5 inches & 1.5 inch.

Visited last night Buder man and  
same place.

Local large burning near town

Start the eng. again. Objections &  
could not be made to run. Mr.  
E. finally made the correction then

Visited Alderman N.H. city - wrote  
"lay out" about 230 lamps  
displayed

Tuesday Nov 21, 80

Paper, Accounts of the Illuminists  
and speaker here last evening.  
Also. Note in Concord the Telephone  
list was decided apt. Edison

Left. Act upon with carbon rods  
in future practice.

Glamb. plating. Lamps. Making wires  
& carbon together.

Wednesday Decr 22. 80

Visited Brewer & Walstroms old camp

Sacramento Cal.

Abund. Mouse, Edin & Warts & Bats.

Motor tested 2600 Revs in 9 1/2 mts.

Sampling 32 oz. sh. - 9 1/2 c. each off  
but 6, 15° each.

Thursday Decr 23. 80

Engine, Now running on cream & fine  
coal 1/2% - and drawn water.

Dynamo large head blocks tied on cow

Wires. Haulin of Mr. K. & Haulin with  
3 pounds.

Motor Mr. Dyer taking the run to  
determine the fault of 61 ohms.  
Normality, Mr. Dyer is in favor  
of winding at about 2 ohms,  
later out to rewind.

American Wire, 1000 ft. in Laboratory.  
Yours white sheet lit, line bound out, door  
up.

Yards lots commenced trading at  
& factory with Dynamometer.

Tuesday Dec 28.80

400 lights put out and economy  
test of engine made. 75 Rev 98 lbs  
steam, 6.4 per hour power on Chulman  
we. last night again burning.

About 5 P.M. at about Friday till  
this morning.

Well, on Friday some further  
live and preparations made  
for starting driven mill. Actual  
work commenced Monday morning.

Today the second tier of pumps  
completed during day, above not  
yet started, no carbure.

Motor small, gas removed and  
thin of shafting put up to be run  
by it.

During the afternoon decided that  
for cooling the air from mounds  
while cooling, they retain natural  
color.

Wednesday Dec 29.

Papers cleared, dispatch from Phila. that  
C.A. Engine is finished and about shipped  
also that Res. reply from L.A. Commerce  
allowing E.L. Co. to put in more at 10.00  
per barrel, part of that distributed & also give  
pay 3 bunch of gas receipts.

About 11.00 Edison & Clarke in N.Y.  
Killed Maj. Eaton.

2 large lamps comparative test with school  
& 2 small incandescence, best results.

Asher taken to factory to disassemble

Dec 29

Got the last 100 amperes & 475 volts  
to day at 48% amperes 52-57 = 475

Thursday Dec 30 80

Power no power in morning changing  
batteries for Organ Case.

Plating & for sketches for gamma treating  
for persistence, one of plating apparatus  
made by Mr. Edison in Dec 11. Mott  
done for bat office drawings

Expanding the second half lamp shown  
delivered completely and taken to West house

Edison's Room Mr. Clark is now in the  
in detail of Epimaco Org for bat of Power

Friday Dec 31, 80

Watch. G.P. Mott watched all last  
night to discern if possible the  
cause of the A. V. Smith plug being  
misplaced at 6 steam pipe heated  
out and some other Laboratory.

Abundant Mr. Clark in the case.  
Hollows. Biont. etc.

Present Mr. Edison very much pleased  
X can run M.C. 3000.

1850 discs with two new means for the  
of best semi-discs to day and things  
in readiness for illumination for next  
night very cold.

Southward Mottas the cause from the  
factor would be in the case  
very high resistance from 200 to 700  
inches. Endurance of shorter and longer  
plum carbons not yet done

Dec 31. 80.

Factory. Notice posted that Mr. W.  
Xavier has charge over after dinner.

Mr. Bamber. Van G. carbonized and  
sample. Still one from sample  
Xavier by Braden. It has been sent by  
agent sent to Japan, very fine dan  
primes Bamber.

Saturday Jan. 1. 81

Carbonization. Chas. J. G. got very  
good results on ordinary charcoal  
sticks by passing gas of Platinum  
pink through tube during heating.

Work. Holiday. No one working  
except improving to illumination  
408 lamps lit in evening a  
number of visitors. Rev. E. J. J. J.

Test of engine made by Clarke  
Eng. 75 H.P. 82.5 H.P. 408 lamps net  
61.95 H.P. 408 lamps 6.59 per H.P.  
Pilot off net 7.88 on 2.58 lbs. steam  
per H.P. per hour, boiler pressure 110  
diagrams perfect  
Paper World, Edison Miscellaneous  
long article, Edison Miscellaneous

Sunday Jan. 3. 81

Visitors, Mr. J. W. W. W. W. W.  
J. W. W. W. W. W. W. W. W. W. W.  
Also the 5th of January. W. W. W. W.  
with artist also Bickerson in evening.

Will. W. W. W. W. W. W. W. W. W.  
X. W. W. W. W. W. W. W. W. W. W.  
by 1000 lbs in one day in 2000 lbs  
Factory.



Thursday Jan. 6, 81

Imogene special, Logan is sending  
magazines with about 40-45 No  
draw for general for Building Office  
in New York.

Carbonization, Acherson is getting  
very good results (metallic carbon)  
the tube with the same products by  
high vac. heat.

Illumination, Lie about 20 lamps  
xite & celero, definition 175- No  
test made, boiler exploded & engine

Vincent, Logan & others, of Denver, Ill.  
the business, & Jan & a number  
of others, still hold in C. tests

Lamps, Lawson, directed to make  
test with Prop. etc in lamps.

Friday Jan. 7, 81

Where seen, short description of  
the lamps, like last night, and  
what is subject of the Edison Eng.

Platynia carbon, on sample, low vac.  
shown by high vacuum on same sample  
with vacuum at high vac. Rd 16, 18, 19.

Outside circuits 377 posts & up = 382  
with lamps on & in operation.

Assessment, Mr. Edison made \$1000  
for 20 years for 20 years of  
Assessment with due compensation





Tuesday, Aug 11

Carlton Jensen, American, making model  
design by Baethke for Alaska, eastern.

P. G. Eng. in. Machine, designed planes  
have moved into Eng. room.

Went Mr. Edison N.Y. all day.

Saw Mr. Dyer, General, home as R. R. Dept.

Alma Lee, Commenced putting  
together on the commutator.  
Model of road & part of road, direct  
commutator now making.

Aug 12

Special Ammation single wind for N.Y.  
Xenonator tested 0.38, the half less  
than expected.

Wednesday, Aug 13

Bracket double jointed spring  
contacts solid, just finished by H.

Plating apparatus finished by Edmund  
Xenonator & thumb screw to regulate the  
depth of the plating.

Clamp by deposit. Also made 10 ft. diam  
wooden strips with hair rubber on it.  
Holds the inner tube submersed and  
wood strips had it broken up by <sup>water</sup> pressure.

Given 100 gals. ac 24 h. in engine  
room to cover P. G. box & engine etc.

Large dynamo for the car magnet arm  
Xenonator & road for "big"

Albert, Messrs Edison, Thomas, Baethke  
from New York.

Thursday Jan 13, 81

Factor, Birds, alivina and more  
 set work on Bird's foundations etc.  
 in corner of lab.

John E. O. Hamilton, Eng. in charge. P.H.

Expt. lamps. all gone but 2. Latent gas lamp  
 Mr. Edwards' engine determined it had fuel  
 at 36 candles. instead of 48. as they  
 experiments continued during the night  
 and Mr. Edwards found that the motor had  
 been made in taking on in the evening. no  
 special exp. lamp at the Laboratory.

Motor base <sup>Jan 14</sup> for 2 signs of Western  
 the engine plans drawn on large  
 plans.

11

Friday Jan 14, 81

Papers. This week 'Scientific American'  
 illustrated & describes the Peter Wilson Engine  
 some very well with short descriptions of the

Special Experimental Camps "H. & M. made  
 last night out up & tested by James

Wills. Higher of Newton's value of air being  
 1.25. is now estimated made to run at 1.25  
 at same time. Report of Gas Engine  
 at the Museum at New York.

Sketches made by Dr. design for new  
 machine.

Building apparatus made, spring bar  
 in coils, each bar 2 fine steel rods  
 & 4 small holes through for the  
 spring ends for the glass to  
 fit in.

Saturday Jan 15. 81

Absent, Mr. Edison in New York  
L. P. Mott left for home, 11:20

Worked general for part week. Went  
at work in building additions at  
factory. Continued continuing experiment  
on coating carbon, & began to  
prepare Beta Alkali Engine  
Gears & Assist to on Alternator.  
Model drive gear, made  
by Birmingham, A. Menden  
of Eng. Lamp tested at 14.8.

77

Patent

method of  
sealing & pressing

pulling several wire pump.



Binding of wire  
insulated with  
syringe

Hp.  
Dynamometer

wooden cylinder  
brass  
pump  
wire  
insulated with  
syringe

Patent for sealing vacuum  
bowl in which wire is sealed

draw out ducts, -

Wires with loose paper much more than  
shog, carbon weight on top.

Break chit nut

Mica commutator

cut of carbon with substance

off lamp with copper or silver



blow looking white  
glass

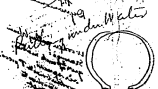


with wire in vacuum  
with wire in vacuum

CU 2



use flat glass  
while sealed  
get high vacuum then light lamp  
finish seal while lighted

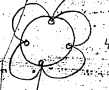


Vacuum pump.  
Reservoir. Hg. Mercury  
Seals Cooks -  
weather sealing off glasses  
# little Hg run first  
sealing only drop tubes -  
comp. same



Extra piece paper put on with little oil  
or tar, & then Carbons in  
Extra piece Carbons paper put  
between clamps  
between resistance.

of horseshoe or circles over  
Crown of circles quartzized -



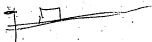
Parallel board - are on top  
not

Safely Catch, pulling in sewing  
= Motor, for sewing. Brake, those pulley - gears  
governed Motor, connecting motor. Multiple

Jell's Factory Lamp test 119, 171, 172  
 Nichols' Meters 109, 118  
 Edison Sketches for Patents 60 V  
 Baretta's Lamp experiments etc 136 Lf  
 Adams' Electrodyn. Expts. 153 V  
 Walsh Experiments at factory 186 V  
 House Outside Lamp recd. 178 V  
 Statistics condensed 120 V  
 Yarrow Experiments on carbons 168 V  
 Jell's Experiments on lamps 189  
 Hammer from Factory (Jell's) 186 V  
 Hammer Test Bar & Bumbo 166 1/2 V

E. W. Gussner  
 174 V  
 Kuykendall

Col. Stewart Worley  
 Rt. Mas. & Kensington,



**Mott Journal #6 [PN-81-01-19]**

This is the last of six pocket notebooks used by Charles P. Mott, a member of the office staff at Menlo Park, to record daily activities at the laboratory. The entries from these notebooks were used as the basis for more extensive entries recorded by Mott in Menlo Park Notebooks #53 and #117. The entries in this pocket notebook, which covers the period January-March 1881, continue beyond the entries in Menlo Park Notebook #117, which ends in January 1881. The front cover is labeled "155" and is inscribed "C. P. Mott Jan'y 19. 81" and "6." The pages are unnumbered. Approximately 50 pages have been used.

Wednesday Jan 19.81

Telephone, one box of need  
from Bergmann's. Maguire call  
from Main etc.

Carbonization. Mr. Balthus let  
I should find factory - carbonize  
now, later away again without  
opening.

Alumination. About 500 lamps  
were burned last night. A  
large number of bottles were  
also burning. Cummings  
blows, McLessee & Robbins, Penn,  
and a number large gas con-  
sumers.

Series lamps. Mott made Pot. of  
Kearns series lamps. 1 to 11  
according to resistance



Thursday, Jan, 20, 1881

Lat. saw a package of Pat-  
X sent for stamps recd from Secretary

Agnes Howard's article of their  
Xpert's "Black" gold, and per-  
Xprivileges from being to lay mines

Agnes Howard's article of their  
Xpert's "Black" gold, and per-  
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Lat. saw a package of Pat-  
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Xprivileges from being to lay mines

Agnes Howard's article of their  
Xpert's "Black" gold, and per-  
Xprivileges from being to lay mines

Friday, Jan, 21, 1881

Pat. Herald has short editorial  
on the unfairness of the signature  
X of the City, in the Sign. before  
privilege of putting in mine etc.

Pat. Herald has short editorial  
on the unfairness of the signature  
X of the City, in the Sign. before  
privilege of putting in mine etc.

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on the unfairness of the signature  
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on the unfairness of the signature  
X of the City, in the Sign. before  
privilege of putting in mine etc.

Saturday, Jan. 22, '81

Spec. Dynamo. 120 half lamps out  
on special at 1100 revolutions and  
gave about 5 candle watts lamp.  
64 volts at 1100. 46 at last lamp.  
Output was 52.68 at 1st lamp & 57.5 at last.  
Lamp 29.99 - 44.44  
Absent Mr. Edison -

Milton recd from Bergmann

Work coating Lowell lamp on air  
pump to coat with glycerine & fill  
acid, Hg.

Work general, large dynamo making  
connections, special machine for  
No. 9 furnace and tubes. Old melting  
hard sulfur, scraps. Uncon. in boxes  
for making rods.

Monday Jan. 24, '81

Barber. No steam yesterday and the  
pump thoroughly cleaned and  
examined.

Absent Mr. E. Mr. R. at N.Y.

Carpenter shop. Steam room back of  
lab. today. Cleaned for Carpenter shop -

Carbon coating. Howell got good results  
on 2 lamps.  
Jack put in sulphur on plate of  
beats carbon in air pump.

Standard Energy. Francis claims he  
has fully demonstrated a lamp that  
in any case doubt the energy  
gives 8 times the candlepower.

Tuesday Jan'y 25-81

Went Mr. Edison again at N.Y.

Plating the steel plates to nickel  
Krupp fittings, & Messrs. King, Parker  
on ends before placing in solution.

Wrote Nichols some notes on lamps  
in circuits, etc.

Specie N.Y. Express shipping to day.

Cable pipe, sketch made by Mr. E. of pipe  
with insulating pieces fitted to keep wire  
from contact and admit of running  
in an insulating material.

Spoke, but in cable and a slight  
slipping turned off.

Farley small got slow motion and

Wednesday Jan'y 26.

Barbington, 1st. Mould taken from  
New furnace in furnace room opened  
just before 100 B at 750° F.

Steam calorimeter test, preliminary made  
by Black & Asher. Steam determined  
to be superheated, 185° F. 101. - cast 175° F.

Machine Exp. Machine full fed from  
the main multiple case wires very good  
Results but Francis thinks not so good as  
our existing machine.

Illumination. All lamps set on, lamp  
working smoothly, several Massey's  
burn here, also Lowry, Ordaard  
some upstart & plenty of others.

Electric Note made Pat. Office drawings  
of lamp socket in connection with the  
universal bracket.

Thursday, Jan'y 27, 81

Absent Mr. Edson reported to have  
gone to Washington

Pat. Alig. Man. Rev. today. Also work  
on putting engine together

Spruce dynamo. Bands moving since  
machine has been running long exp.

Carbonization. Acheson got excellent debris  
from his carbons at low heat in long  
combustion tube, heated the whole in gas

Illumination, lit. this evening. a  
number of visitors here.

Spokette. All made sketches of a  
number of different designs. Some by Mr.

Friday, Jan'y 28

Absent Mr. E still absent  
Miss Mr. Goddard here nearly  
all day

Indicators rec'd last night  
and adjusted clean & run by Mr. Clark

Carbon dynamo. Testing. Aluminum, magnesium  
iron, silica, cerium, quick  
Barium chloride. Mechanical. Mixture  
in water, applied with brush on face of

Elevator put in. Factory from Glass  
Depth 14 ft to 2nd floor.

Plat. Expansion. Expts made by Mr. Clark  
of expansion of plat. iron by current  
studying the adaptability for metal  
purposes

Carbonization 1 Mod. B. No. 1000 110 to 1350

Saturday Jan 27.

Hines & Hutton, Inc., Birmingham & Alton  
 X. M. starting dynamo & putting up leads  
 for Hines & Hutton in 11 at St.

Getty, Eng. received on service  
 to day.

12 hrs test engine & lamps run all  
 night 12 hrs and test made 426.  
 No 423: 10 current of air machine side  
 to total 10

Second test of circuit on 423, 424  
 X 2 ohms on. Antipode made ground  
 28 ohms.

Monday Jan 31.

Fixed the Oil Pipe & Man to set up bag.  
 Alton & Hines at 11.

Plumbago Holiday made plates & pieces  
 X the two cylinder engine for pressing  
 plumbago in Hydraulic Press.

Cartoning, Mr. B. cartoning 102 drums  
 X paper on which to cartone paper  
 by current in bill of air pump.

Thursday Feb 1. 81.

Standard last disc tested all o.k.

Carbonization, paper was carbonized  
Ketchikan and carbon, very metallic but  
some black.

After Mr. B. had helix made for  
working up nuts.

Mining lamp's shell made by Messrs  
given Andrews to make lamp. saw  
shell in jar arranged to be in  
current without spark.

Spent Mr. Clarke in N.Y.

Wednesday Feb 2. 81

Plate lamps, excellent record.  
Flat wire incision of seal discolored  
on negative pole.

Spent Mr. Edison & Clarke in N.Y.

Carbonization, Larnes & Asherson claim  
get higher to experiment on carbonizing  
got both empty bed in later with  
gas.

Carbonization, all lamps lit. for  
persons here very cold, during  
breeze again sleeping.

Spinal carbon, tire spine carbon  
lamps were sent up today as  
on my line in globe, no better record  
any.

Thursday, Feb. 3. 81

Carburettion, was sealed top in  
faster air driven out by Gasoline  
gas. & heated by current.

Wrote letter from Labors

Wrote Mr. Andrews regarding, getting  
fastings of induction apparatus for motor  
experiments.

Paper getting dis. some & some paper: subject  
very nicely. Carburettion by Labors.

Hydraulic Press taken apart for  
repairing.

Wrote machine. Since, but  
for multi are some more time  
on slow motion of the 5 lamp  
on other circuit.

Friday, Feb. 4. 81

Absent Mr. Batchelor left at 11:30 to  
take the ~~Carburettion~~ in car to the  
morning. Edison in N.Y.

Wrote, Bigler of Newburg, some letters  
from Baltimore

Wrote, Impara, Communication and  
the ends placed on right  
and have being placed.

Carburettion for hair got very fine  
fast, blue, with common gas. 11:30  
from time of getting in end in furnace

Wrote, some letters placed, not from  
off, propeller for the clock work  
for balance wheel, formula with 9000  
shaded disc, means and arranged  
to count at each vibration of the  
shaft.

Saturday, Feby 5-81

Leahurst, Dr. Haia claims to have  
 been awarded \$100 for Malaria Carbon

Whiting Buoy dynamo finished  
 Ho. L. gave 8 small animals to show  
 Lt. 2 day lamps to about 8 candles each

Leahurst, Dr. Haia recd. \$100  
 \$100

Letter from Mrs. Haia sent to  
 Allen, came to complete the Engraving

Will general carbon, finished  
 by Haia, Mr. Baistula sawed for  
 Joseph. Mr. L. convenient terms  
 for new work arranging office on  
 5th Avenue, Large Amusement Place  
 on shaft. Buoy dynamo finished,

Sunday, Feby 6-81

Indians, Mac. brought me with  
 arranged & working good with me. No night  
 call for same. Two with small buttons  
 for signals 22 of a constant 20 to 25 feet  
 into the water, perhaps yesterday.

Start Maine, designs being made  
 by Mr. Kress, of New York connection  
 etc. for same.

Mt. Francis experimenting with  
 Kinetic motor for water supply, by  
 request of Mr. Edison

Longer of main driving pulley  
 placed with rods from wall  
 each side

Text made copy of Mr. G's  
 list as arranged for publication



Monday Feb. 7.

X19 pages—

Contract also made copy of  
contract Lamb Co with Light  
Co for exclusive priv to M. Camp  
at 35c, each should perfect and  
that by 5-01 an even the 22-01-01  
5-01 to be given to Light Co.

Abstract, Ann E. G. Clarke in New York.

Morning, S.A. Mitt. ned vidare tillge-  
X ten S. vikt all skickare.

Plumbago. Adhesion commenced  
Kept on Plumbago on Hy Escoria  
Russ.

Tuesday Feb. 28

Threat app. Adhesion. Pressed a fine sheet in the die and had Bradley cut out a corp. cut very nicely. but too thick. Pressed some more sheets about, etc.

Large Annular, all coffee on 4  
x 20 or 22

*Illumination. Set in the morning  
X Special train loads of air cases  
from Mirain*

Electrolysis. Dr. Hare had made  
a bag of Hydrogen & one of the  
gas burners at Fairport, placed  
to try to produce metallic carbon  
lump.

Robert E. Carter, Jr.

Wednesday Feb. 9. 81

Went Mr. E. & Johnson on day

factory engine got under shaft  
of building,

Plating, Larson, being in the  
X-ray, being, putting it under  
a beam, it was encased in lead

Musical, set in evening  
X-ray, number ten from night  
barbed,

Papers, Remond, before said to  
have favorable articles on the  
display last evening

Thursday Feb. 10. 81

After carbon, Dr. Haid passed gas  
through metal in Gas Furnace  
Not factory, in before Banco carbon  
got poor results.

Chicago, Arthur got a couple  
X-ray, set was passed, machine &  
plating, & Arctur, set, one broken  
in clamping & one in putting in lamp.

After Mr. Edison, Arthur, (Larson)  
For, more, & Arctur,

Plating, Larson, set in clamping  
X-ray, set, in machine, but by  
one connection through rubber  
tube.

Will, drilling, stopped at about 12.6  
but apparently being taken down

Friday, Feb 11, 81

Carbon deposit. Dr. Haide passed <sup>Hydrogen</sup>  
gas through mounds too high, but <sup>at</sup> ~~the~~  
then burned in Hydro gas, and <sup>was</sup>  
was nitrogen in cooling, & air locks.

Plumage, Ashes, rusted and cut a  
quantity of locks and g. 1-7 drawn 24  
5 in. Canister ready for pump.

Plating, locks, bottom by Larson.  
Xite in the masonry, made from  
the highest & most first deposit, but  
not in crushing path.

Metallic, are with some 2 or 3 in  
like connections, fine line, but have  
not iron ore, very little from other  
quite large.

Memoranda for special, Hille  
X host

Saturday, Feb 12, 81

Hanchette. Sample from Moore  
being tested. Hanchette so far  
making the best & an excellent  
Xecuted, full large drawing 1/2 angle  
in carbonizing make much better  
used than with full weights 1316  
219, bge 3 etc.

Amateur, large Amature finished  
Xomplete nearly for plating, tested  
and found too high resistance.

Wind gauge of past week, Dr. Haide  
creating carbon locks. Ashes  
giving plumage, & a few  
samples of the locks, 2 or 3 in. with  
large Amature finished & found  
too high. Commenced plating in  
quantities in lengths at factory.

Wednesday Feb. 16.

Went to P. Moto since Saturday.

Armature find on return the large  
remains apart & I was soldering  
the joints, by electric arc.

Plumb blimps, Achern, has had  
blimp lamp burning, Mr. E.  
well pleased with results.

Noting general order signed by  
learned general manager, interest in  
shop & laboratory.

Miles. Carbonate for evaporation made  
by John E. received part of solution  
to give when liquid at a certain  
point in curve.

\* Films to be taken from Branner.

Thursday Feb. 17. 81.

Blimps, deposit with abolished at the  
factory. All cartons to be plated on.

Pumps, don't. Contractions tubes leading  
into one common tube being tried.

Plating Apparatus. Curran had made  
flat shallow dish, number 1000  
flasks in bottom through which pass  
the wires & ends of inner tubes. These  
tubes filled with plating solution up  
to proper height on carbons.

Large Armature, again together and  
tested 014 times.

Plumbago, after heating on pumps  
observed to be much stronger, & better  
of the clamped & plated by Achern.

Friday Feb. 18. 81

Plantago Heated in Mowda. 15 grt  
X out & out for clamping 15. more last i.

Foundation. Mr. Kneis' matching up-  
grids Campbell's Nat. Drying Application of  
Paraffin, increasing to commercial  
operation at building in Washington D.

10 HP Engine Hamilton, 1150 Nova Road  
X-1 Shop.

Visitors: Sig. Lee, Henderson  
The lamps were burned;

Mula Ott. completa on both sides  
on spring, which in morning on  
Xlight, divide and by a spring strip  
of frame. Mangle and 4 inches to  
which hand is attached.

Saturday Feb. 19, 81

Hydro carbon. Dr. Haid. still experimenting to get looks of uniform casting.

Buckeye Animators. Copper plates needed  
and word to day commenced cutting  
Xent discs & bars for Buckeye Animators.  
Smaller in same principle also commenced.

Poster Annals. safely deposited in  
the library,

Work general for east-west. Gr. Hard  
encountering, still in depositing Mel-  
lissae canons. Pater radialis immobility  
have removed & sold and on. Hanging resistance  
down to 1000 ft. average work continues on  
disc ~~encountering~~. A number of Monte-  
Campes made & three mountains. W. W.  
Edison. Edison. Edison at N. Y.

Sunday, Feb. 20. 81

Insulation, Francis tested with <sup>quadrant</sup> ending  
from coil & Thompson's electric meter. The  
insulation of pipes very good insulation.

Capit. dynamo. All in readiness and  
magnets connected in series.

Monday, Feb. 21

Mr. Francis determined the speed  
proportional to the current, from 143

Monday, Feb. 21. 81

Rise Amature, Dean commenced action  
X-rays sink in water, in rise amature.

Acce. Another amature missed with  
the base due inability to slip the nut  
under the mica-protecting ring.

Ex. Lamp. 42. plate lamps cooling &  
X-rays B. Wright started this P.M. for tests  
at 128°

Brachi. blue. but from Rinas can be worked  
No. 2. L. & J. No. 1. like last. large  
granules along bank of Amazon.  
S. Labou, N. C. but can be worked. S. No.  
25 in. flange out of 150. tried. Harroona.  
Abundant grass of long without joint  
among the white drying. I Guannamby  
N. G.

Tuesday July 22. 81  
 X now in evening, now not running  
 Victor Miller. Haines. Connected Magneta-  
 in multiple arc in main line and with 2  
 lamps, higher speed as lamps are 15 7.  
 annulation then removed for resistance

New lamp. 5 carbons, some in clamp  
 for plating, sealed in with some plate  
 handle well, & give good appearance

Deposit on paper. A mound of broken  
 carbons treated by Haines very irregular  
 but irregular deposit

Shinkaga. 1 lamp tested by Haines 6  
 when cold. est. 5 ft. 21 mls. 4.138 ft  
 lbs at 16 c. alt. 8 ft. H.P. 13 mts. 233 ft. 96

Engineer, Hampton tried empty floor from  
 station not sufficient. Put in Eng. room  
 place,

Wednesday July 23. 81  
 Hampton Eng. room 1440 with 70 lbs. steam  
 X Haines in 1155 Rev. on 1155 + 1230 - 60 steam  
 machine 1155 Rev. 57, lamps, 16

Shop fixtures. Hachette used & D. Haines &  
 assistant putting wires in shop

New lamp. Lamp heated in 3 mts. 2  
 standing over, heated over in clamp.  
 one destroyed by running.

Hydro carbons. Dr. Haines through Haines  
 X says a great many experiments will  
 have to be tried.

Got lamp in, 42, all gone but 16 in about 10 hrs  
 X from vacuum

7 papers for Haines treatment sent  
 to Laboratory

Thursday July 24. '81

Went Eng room about two minutes on  
probably to see Rev. Smith's electric  
X-rays. Not able to find electric in electric  
leaving commutator out. Arrived evening  
all the lamps at 5:30 P.M.

Factory. Bolson found up with slow  
wood fire.

Plating. Lanson had for last made  
X-ray in 5H. Carbonate about 2434

Hydrocarbon. Lanson got a number  
of rays. Nice ones and some at  
New has determined the conductance  
Some placed on test to say is 18 amperes

Small Motor. Magnets & Armature  
reversed

Friday July 25. '81

Factory. Position. Lanson from side of  
X-ray room and moving across into  
into end of room.

Boys at limit 27 trips broken by Hanc  
X-ray plating.

1 hp Motor. 7.2 layers 20 wire on  
Magnets. 234 ohms. 232 p. 111



Saturday, Feb. 26. 81

Peter Allen runs all day at about 800  
feet to smooth her up.

Spent time from 10:00 to 12:00 by  
Francis.

Spent afternoon from 1:00 to 4:00  
and connected to later. arranged material.

Wrote cups a box set of paper meter cups.

Wrote general past work. Peter Engineer  
runs for the first. Arranged material.

Wrote work began on disc commutator.

Wrote at factory find up. Hilda experimenting  
on electrolysis. Francis on Motor Machine  
Eating, black. Peter Mower. Mower about  
all work.

Monday, Feb. 28.

Peter Allen, runs <sup>last night</sup> at 600 P.M.  
of about 18% proving that she will do  
well that has been expected of her on 800.  
To day Mr. Peter has altered condition changed  
to hand valve etc.

Pump Motor from factory sent to shop  
to be taken into another machine.

Took Francis to factory. Landed all day.  
Krombager (4 to 5 P.M.) 3.4 P.M.  
arranged. Born No. 2 pump 174 etc.



Thursday Mch. 31

John Engine run at 1135 - 1200 about  
the hour, John has had a slight and over  
stepping engine was found very tight.  
Lateral motion taken out of discs.

Elimination this evening light  
generator running.

Visitors blanks in evening with  
drawings of disc commutator &  
sample assembly.

Examiner one repaired to day  
the other found last evening  
will have to be re-wound.

Friday March 1st 81

Hampton Exp. running 1135 - 1200 lights  
on.

John has running about 800 pretty  
early all day, warmed some but  
did not cut or stop.

Lamps tests 2 & 3 brought up generally  
the pumps running 18.40 min with  
but 15 broken.

Melvin Francis working on meter.  
Heigh's 10.5 bar line glass tube  
found right solution  
with mercury brought tube through  
and set up 10.5 bar on meter.

Leaves All shut down at 8 o'clock

Saturday, Feb. 6, 81

Photographic. All autographic instruments  
packed for shipping to N.S.

Engines. Port. & Hamp. are both running.  
The day light on Hampden, Port. empty.  
At 3.00 P.M. commenced. After heat went  
when empty of steam to about 500.

Made general fast work. Afternoon fine  
beginning to press out. Steamage late  
begin about in N.S. most of the week.

Get assistance passing and making  
Good progress on dice commutator.  
Hampden Eng. started on side  
Lamp. Port. Eng. has run there  
or has to try to get heat out of  
bearings. Test of Lamp. being  
made on table in Laboratory.

Clear. Clear, nice to day. Having  
been shut in Feb. 5th.

Monday Feb. 7, 81

Dice Commutator. All papers done  
Lana was better packed for shipping  
to New York.

Plating 3 in trough in. in to day.  
152 carbons plated.

Spring pump. 6 lamps. A lamp sealed  
off in about 8 hours.

Good Commutator driven by Hampden  
Engine crossed on commutator.

Thursday Feb 8, 81

Exhausted. Great fatigue. trying to do things  
in view of expense in <sup>introduction</sup>  
Paper Lamp. Initia by H. Hara  
Letter by Francis 36 to 40 average  
45 1/2 - 5000. B.R. 244 Dec 231. U.C.

Peter Eng. now this morning 1h 100R  
Xena again in my fast in the  
solid bearing

Plumbago Ashes commenced  
passing experimentally for grinding  
to give required thickness of plates

Plating 100. taken from bath  
Xena 300 in to be taken out  
in the morning

Hampson now in 55 Machine  
put dynamic record out 95  
the necessary work.

Wednesday Feb 9, 81

Bearing. I don't know how much  
last night, evening bearing & morning  
bath & water.

Thomas Andrews' making a series  
of days to continue H. Hara paper for  
carbonizing

Plumbago & Chloro Platinum some night  
mix intimately for plate. add. Mith. acid  
to liquid, put on bath, violent effervescence  
from surface to brown liquid, add  
Bicarbonate to decompose. from mass  
acid. hot water all divided filtered  
& liquid put in better two plates of  
platinum immersed, result a  
dark brown  
black deposit on negative plate  
resistant by Mith. acid or heat

Wed. 9

Aluminum Lamp burned to night  
on 7 machines

Armature too bad up to day one  
by cross one by being connected  
with soft solder

Visitors. Mr. Eason out to night  
for first time. Feb. 25.

Thursday Feb 10

Porter Eng. Service worked all  
night on bearing at 3. am  
found 1000 am lamp on. Machine  
except in bearing room last night  
with Bathie

Records. Orders by Mr. E. to go to  
N. B. office with Elie Light. Orders to  
Canada. Records must come  
from this date.

Hammond Eng. room then afternoon for  
factory and would very satisfactory

Visitors. Mr. E. here again in evening  
also. Dr. Moore, House & Co. Crosby

Mar. 11 - Came in to New York -

Mar. 18. Arrived at New York -

" 19. Machine Rtd at 65 - 5 Cents

" 19. Machine, set up on engine, run  
until 10:00 on the machine made 1100 lbs.

Baah & Mitter 187, 153

Exp Lamps 195, 185, 163, 194.  
Blum & Mitter 236

10 lbs tin }  
10 " Gad }  
5 " Antimony }

John W. Stalder  
37 Orchard St. N.Y.

Ref. Cance & Hester, 6 Wks  
from Norway

4133 ft. the

9 per horse power

5 1/2 ft. per at recent hot-beds

21 roller

95. foot 282-

Wallace & Man = Sam



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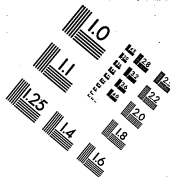
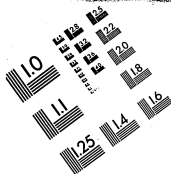
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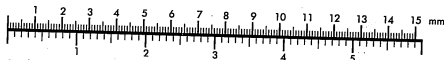


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